

# INSTALLATION RESTORATION PROGRAM

## FINAL ABBREVIATED SITE INVESTIGATION SITES 3 AND 4

APPENDICES A - K

158th FIGHTER WING  
VERMONT AIR NATIONAL GUARD  
SOUTH BURLINGTON, VERMONT

NOVEMBER 1996

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**HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM**  
**Environmental Restoration and Waste Management Programs**

Oak Ridge, Tennessee 37831-7606

managed by LOCKHEED MARTIN ENERGY SYSTEMS, INC.

for the U.S. DEPARTMENT OF ENERGY under contract DE-AC05-84OR21400

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Final

**ABBREVIATED SITE INVESTIGATION REPORT  
SITES 3 AND 4**

158th Fighter Wing  
Vermont Air National Wing  
South Burlington, Vermont

Submitted to:

**AIR NATIONAL GUARD READINESS CENTER  
ANDREWS AIR FORCE BASE, MARYLAND**

Submitted by:

**HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM  
LOCKHEED MARTIN ENERGY SYSTEMS, INC.  
OAK RIDGE, TENNESSEE 37831**

for the:

**U.S. DEPARTMENT OF ENERGY**

Prepared by:

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Oak Ridge, Tennessee 37830**

**DTIC QUALITY INSPECTED 3**

**NOVEMBER 1996**

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**APPENDIX A: FIELD CHANGE REQUEST FORMS**

## 7. FIELD CHANGE REQUEST FORM

Field change No. 1  
Page 1 of 1Project Vermont Air National Guard Base, Burlington, VermontProject No. 931802-08/10Applicable Document: Final Supplemental Remedial Investigation Sampling and Analysis Plan (Earth Tech August 1994)

Description:

Page 2-52, Section 2.7.7 "Site Cleanup", states investigation derived wastewater will be analyzed for parameters identical to those implemented for groundwater samples.Reason for change: To enable timely and cost efficient characterization of contained wastewater, the required analysis was reduced to VOCs 8010/8020 per VT HMMD approval. Analysis for additional parameters are required only if VOCs 8010/8020 analyte detections exceed VT Groundwater Enforcement Standards by 100X.Recommended disposition: Modify the procedure stated on page 2-52.Considering ultimate disposal to the local Sanitary Sewer System, dilution at the nearest sewer system treatment facility (which processes approximately 1.5 million gallons of wastewater daily) minimizes the need for detailed analytical data on small (1,000-4,000 gal) volumes of wastewater.

Impact on present and completed work:

Modified procedure will enable more timely and cost efficient characterization of investigation derived wastewater

Final disposition:

Modification was approved verbally by HAZWRAP, ANGRC, and VT HMMD - October 1994.Request by:  
Field/Project Manager:Greg Maynor Earth Tech 11/22/94Approvals:  
HAZWRAP Project Manager: \_\_\_\_\_

Note: The HAZWRAP Project Manager is notified of the need for change in project cost, schedule direction, or scope. This form does NOT satisfy Sect. 3, "Changes," of contract Terms and Conditions.

## 7. FIELD CHANGE REQUEST FORM

Field change No. 2 (TASK 8)  
Page 1 of 1Project Vermont Air National Guard Base, S. Burlington, VTProject No. 931802-08Applicable Document: Final Abbreviated Site Investigation Work Plan  
(Earth Tech August 1994).

Description:

Section 2.0 "FIELD INVESTIGATIONS," states that the  
field program at IRP sites 3 and 4 will include  
aquifer slug testing and 3 rounds of groundwater  
sampling.

Reason for change:

The primary objective of the SI at sites  
3 and 4 (confirmation of soil and groundwater contamination)  
was achieved during Fall 1994 sampling and analysis activities.  
Completion of slug testing and 2nd round of groundwater  
sampling will enable timely completion of SI Report.

Recommended disposition:

Approve removal of slug testing and 2nd round  
of groundwater sampling from SI tasks.

Impact on present and completed work:

Enable timely completion and submittal  
(June 1995) of Internal Draft SI Report.otherwise, due to laboratory analysis and subsequent  
data validation, SI Report would not be available  
until July or August 1995.

Final disposition:

Modification was verbally approved by HAZWRAP  
prior to mobilization for Spring 1995 RI activities.

Request by:

Field/Project Manager:

Greg Maynor EARTH TECH 6/1/95

Approvals:

HAZWRAP Project Manager: \_\_\_\_\_

Note: The HAZWRAP Project Manager is notified of the need for change in project cost, schedule direction, or scope. This form does NOT satisfy Sect. 3, "Changes," of contract Terms and Conditions.

## 7. FIELD CHANGE REQUEST FORM

Field change No. 3  
Page 1 of 1Project Vermont Air NATIONAL Guard Base, Burlington, VTProject No. 931802-C8Applicable Document: FINAL Supplemental Remedial InvestigationDescription: SAMPLE- AND ANALYSIS PLAN (EARTH TECH AUGUST 1994)  
Page 2-40, Section 2.3.2 "FieldPID Headspace Screening," states that "Headspace  
Screening by PID will be employed on split- spoon  
samples." The headspace procedure included placing a  
portion of a soil sample in a teflon sheet capped glass jar,  
heating the sample to approximately 70°F, and noting the PID  
Reason for change: vapor reading after approximatelyInitial field sampling indicated more 15 minutesrepresentative PID readings were obtained from scanning soil  
samples immediately upon opening the split spoon;  
therefore, these readings were used and the headspace  
Recommended disposition: method was discontinued.Modify the accepted SAP procedure to allow  
utilization of initial PID scanning results todetermine relative occurrence of hydrocarbon vapors, and  
selection of soil samples submitted for laboratory  
Impact on present and completed work: analyses.Modified procedure enabled timely and more  
accurate characterization of hydrocarbon  
contaminated soil samples.Final disposition: Modification was approved verbally by  
HAZWRAP in the field (September 1994).Request by:  
Field/Project Manager: Hug Mayeur EARTH TECH 4/10/96Approvals:  
HAZWRAP Project Manager: \_\_\_\_\_

Note: The HAZWRAP Project Manager is notified of the need for change in project cost, schedule direction, or scope. This form does NOT satisfy Sect. 3, "Changes," of contract Terms and Conditions.

## 7. FIELD CHANGE REQUEST FORM

Field change No. 4  
Page 1 of 1Project Vermont Air National Guard Base, Burlington, VTProject No. 931802-08Applicable Document: Final Supplemental Remedial InvestigationDescription: Sampling and Analysis PLAN (EARTH TECH AUGUST 1994)Page 2-43, Section 2.4.2.1 "Monitoring  
Well Installation," states that "A bentonite/cement  
grout will be tremied into the annular space"...  
above the hydrated bentonite seal.Reason for change: A high solids "Volclay®"-type bentonite  
grout was used to seal the annular space above  
the hydrated bentonite seal in an effort to  
provide a competent annular seal with less risk of  
high-pH cement infiltration to the water  
bearing zone below. All bentonite grout reportedly does not  
Recommended disposition: experience shrinkage - common with cement mixtures.  
Modify procedure to allow utilization of high  
solids "Volclay®"-type bentonite grout in place  
of bentonite/cement mix grout

Impact on present and completed work:

Modified procedure enabled timely and  
competent completion of well installation  
activities and eliminated the introduction of cement  
to the well annulus.

Final disposition:

Modification was approved verbally  
by HAZWRAP in the field (September 1994)

Request by:

Field/Project Manager:

Greg Maynor

EARTH TECH 4/10/96

Approvals:

HAZWRAP Project Manager: \_\_\_\_\_

Note: The HAZWRAP Project Manager is notified of the need for change in project cost, schedule direction, or scope. This form does NOT satisfy Sect. 3, "Changes," of contract Terms and Conditions.



## **APPENDIX B: FIELD SCREENING DATA**

---



September 29, 1994

Mr. Greg Maynor  
EarthTech  
683 Emory Valley Road  
Oak Ridge, TN 37830  
Ph: (615) 483-9404 • Fax: (615) 481-3834

Dear Greg:

Enclosed please find several revisions to the Burlington, VT report we mailed to you last week. The corrected figures reflect some minor discrepancies we discovered in the reporting of groundwater results; namely confusion in the data table as to whether quantitation was in ppb or ppm for "hot" samples. Accordingly, we modified the data table by reporting all results in ppm to avoid any further misunderstanding. Finally, several pages of text (e.g., discussion of groundwater results) were modified slightly to reflect changes in the contouring of results.

We apologize for not catching the discrepancy sooner. In the future we will attempt to report all results in consistent units. Please call if you have questions on this communication. We look forward to working with you again soon.

Sincerely,  
ENVIROSURV, INC.

Jeffrey C. Tuttle, P.G.  
V.P. - Environmental Services

cc: G. Hunt Chapman, EnviroSurv, Inc.  
File Copy

sampling bulbs. A sample was withdrawn through the septum using a syringe and injected directly into the GC. Water samples were received in the laboratory in completely filled 40 ml VOA vials. Ten mls were subsequently decanted and a headspace sample was taken using a gas-tight syringe. Water headspace was injected directly into the GC.

#### IV GENERAL INTERPRETATION OF FIELD SAMPLING AND MOBILE LABORATORY ANALYTICAL RESULTS

The following media were sampled to determine the nature and extent of possible contamination by target volatile constituents.

- 133 soil-gas samples (plus approximately 10% QA/QC data) collected from three sites.
- 18 groundwater samples collected from two of three sites.

Sampling locations and corresponding soil-gas and shallow groundwater results for the three sites are included in **Figures 5 through 9**. **Tables 1&2** contain all soil-gas and groundwater screening data, including QA/QC results.

• **Site 1 - Fire Department Training Area/Old Landfill (Figure 5)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 21,000 ppm Total Volatiles. Significant "hits" for the most part appeared within and in close proximity to former burn pads. One additional anomaly in the 100 ppm range was detected in the center of the "old landfill."

Low-level chlorinated solvents (< 2 ppm TCA) were detected in soil-gas at several locations within and along the northwestern boundary of the "old landfill." DCE was detected at sample location SG-1, within the burn pad. Its presence indicates that solvents were likely burned along with petroleum hydrocarbons for fire training purposes.

No groundwater samples were collected at Site 1. Nonetheless, deep (> 10') soil-gas data, from sandy soils in close proximity to the shallow water table, suggest that groundwater has likely been impacted by historical burning and land disposal activities.

• **Site 3 - Dry Well (Figures 6&7)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 27,000 ppm Total Volatiles. Significant "hits" for the most part were detected in close proximity to Building #205. There appears to be some association between sample concentration and the location of subsurface storm drains and old JP4 distribution pipelines. Total Volatile results from one sample in each of the "old tank pits" indicated the potential for residual soil and/or groundwater contamination in these areas.

Low-level chlorinated solvents (< 1 ppm TCE and PCE) were detected at several locations west of Building #205 (e.g., 3SG-1, 3SG-7 & 3SG-8). Their presence may indicate some relationship between the numerous subsurface drains and utility trenches, and contaminant movement and distribution.

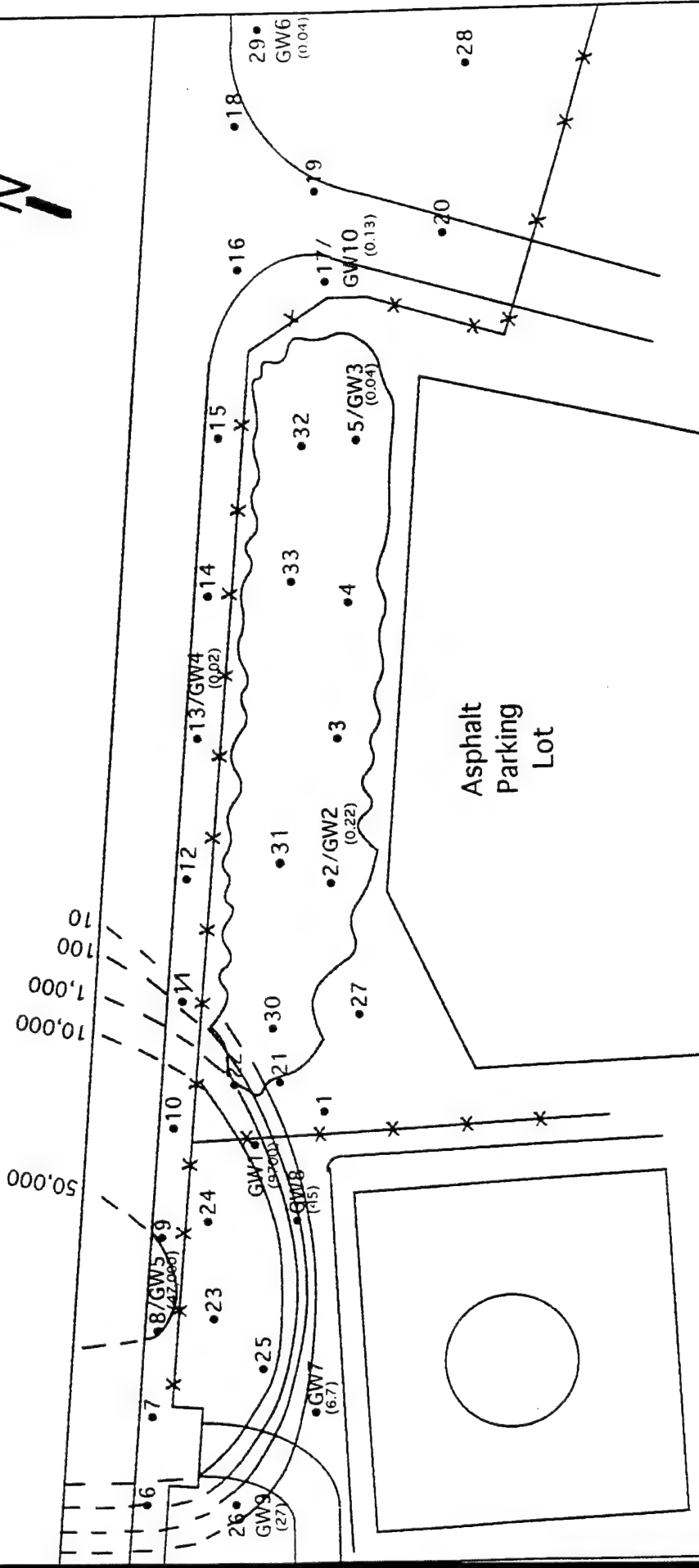
Significant groundwater results (up to 84,000 ppm Total FID volatiles) were detected throughout the entire Site 3 area. At every sample location, benzene was quantitated at one to several orders of magnitude above the Federal Safe Drinking Water Act (SDWA)

Maximum Concentration Level (MCL) of 5 ppb, a common health and regulatory corrective action benchmark. It appears that groundwater has been severely impacted at Site 3. The significant dissolved-phase concentrations detected indicate the strong likelihood for free product migration.

• **Site 4 - Drainage Ditch Area (Figures 8&9)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 17,000 ppm Total Volatiles. Significant "hits" were found primarily west of the drainage ditch. Contamination appears to trend off-site in a northerly direction from 4SG-8, 4SG-9, 4SG-10 and 4SG-11. A second 100 ppm range anomaly occurs along the axis of the trench in an east/west direction.

No chlorinated solvents were detected in soil-gas at Site 4.

Significant groundwater results (up to 47,000 ppm Total FID volatiles) were detected throughout much of the Site 4 area. Maximum concentrations correlated well with soil-gas data, and were located in the area west of the drainage ditch. At six of ten locations, benzene was quantitated at levels from one to four orders of magnitude above the SDWA MCL of 5 ppb. Similar to Site 3, it appears that groundwater has been severely impacted at Site 4. The dissolved-phase concentrations detected also indicate the strong likelihood for free product migration beneath this portion of the base.

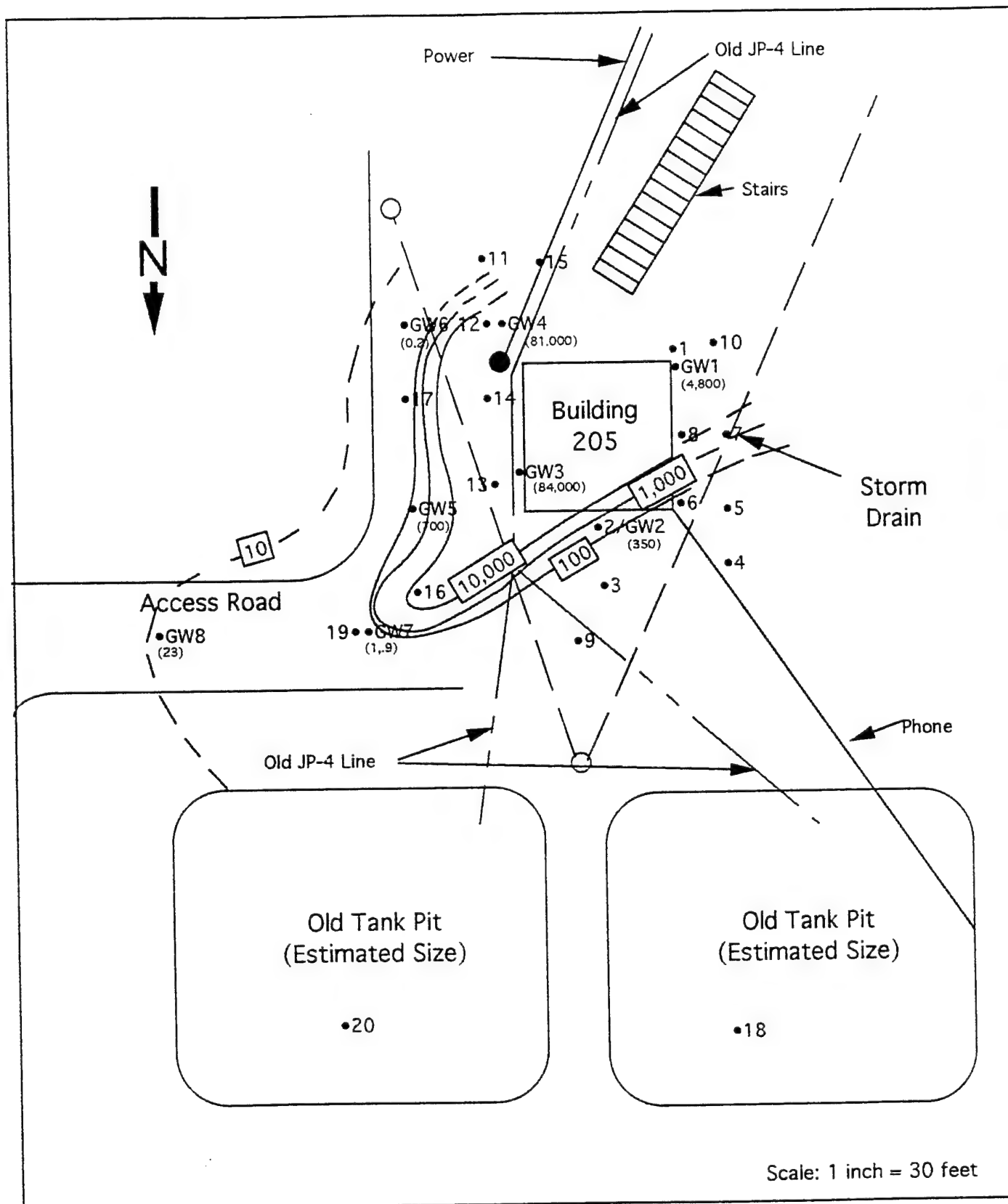


Scale 1 inch = 60 feet

Figure 9. Site 4 - Groundwater Results,  
Total FID Volatiles, ppm

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Figure 7. Site 3-Groundwater Results  
 (Total FID Volatiles, ppm)

Table 2. Groundwater Data

Water results are expressed as ppm

Sample ID	1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TCE	POE	Benzene	Toluene	Ethylbenzene	Xylenes	Total Volatiles
<b>Waters</b>											
3GW 1	16.5	<2.0	<2.0	<0.2	<0.2	<0.2	4000	4800	59	1800	4800
3GW 2	19	<2.0	<2.0	<0.2	<0.2	<0.2	49	11	1.1	9.7	310
3GW 2 L	19	<2.0	<2.0	<0.2	<0.2	<0.2	57	9	8.7	8.4	350
3GW 3	19	<2.0	<2.0	<0.2	<0.2	<0.2	3000	1800	5000	500	84000
3GW 4	19	<2.0	<2.0	<0.2	<0.2	<0.2	14000	18000	5000	340	81000
3GW 5	22	<2.0	<2.0	<0.2	<0.2	<0.2	100	11	1.0	17	700
3GW 6	21	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.23	0.048	0.023	0.037	0.2
3GW 7	24	<0.002	<0.002	<0.0002	<0.0002	<0.0002	4.7	1.9	1.0	0.9	1.9
3GW 8	24	<2.0	<2.0	<0.2	<0.2	<0.2	41	7.4	6.9	3.7	23
4GW 1	21	<2.0	<2.0	<0.2	<0.2	<0.2	540	98	700	96	9700
4GW 2	30	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.029	0.006	0.002	0.007	0.22
4GW 2 L	30	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.040	0.010	0.002	0.009	0.28
4GW 3	30	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.006	0.005	<0.002	<0.002	0.04
4GW 4	24	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.002	0.002	<0.002	<0.002	0.023
4GW 5	24	<2.0	<2.0	<0.2	<0.2	<0.2	9300	500	<2.0	660	47000
4GW 6	24	<0.002	<0.002	<0.0002	<0.0002	<0.0002	<0.002	<0.002	<0.002	<0.002	0.036
4GW 6 L	24	<0.002	<0.002	<0.0002	<0.0002	<0.0002	<0.002	<0.002	<0.002	<0.002	0.015
4GW 7	24	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.77	0.33	0.26	0.62	6.7
4GW 8	21	<2.0	<2.0	<0.2	<0.2	<0.2	56	19	53	11	45
4GW 9	21	<0.002	<0.002	<0.0002	<0.0002	<0.0002	5.0	0.34	0.4	0.75	27
4GW10	21	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.016	<0.002	0.006	0.005	0.13

L= Lab Duplicate

F= Field Duplicate



**PRELIMINARY SITE INVESTIGATIONS REPORT:  
SOIL-GAS AND LIMITED SHALLOW GROUNDWATER SURVEY  
VERMONT AIR NATIONAL GUARD BASE  
BURLINGTON, VT**

Prepared for:

**The Earth Technology Corporation**  
1420 King Street, Suite 600  
Alexandria, Virginia 22314

Prepared by:

**EnviroSurv, Inc.**  
2800-C Dorr Avenue  
Fairfax, Virginia 22031

September, 1994

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General Interpretation of Field Sampling and Mobile Laboratory Analytical Results

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Table 2. - Groundwater and Associated QA/QC Data

## I PROJECT SUMMARY

The report findings presented herein, represent partial actions taken to identify problems with potentially contaminated sites at the Burlington, VT Air National Guard Base (ANGB). Prior to soil-gas and shallow groundwater sampling and analysis, The Earth Technology Corporation (TETC) performed a preliminary assessment of the subject Air National Guard facility. This effort included a surface reconnaissance and historical records survey for evidence of possible contamination. Three current or former "waste handling/disposal" sites were identified which had the potential for hazard-producing activity and/or environmental contamination. As a result, a preliminary soil-gas and shallow groundwater survey was recommended to evaluate and verify the existence of potential contamination at each site:

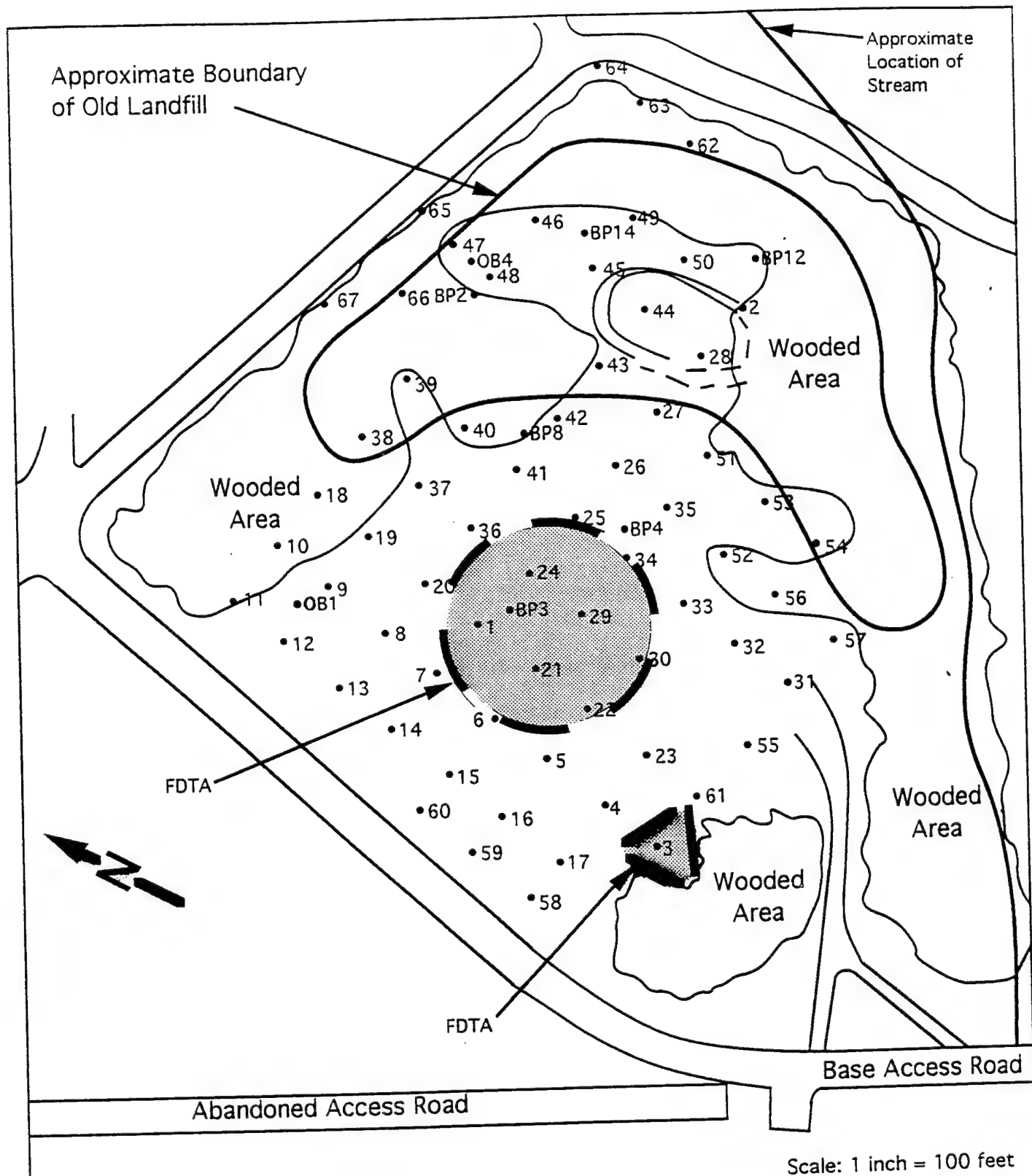
- **Figure 1.** Site 1 - Fire Department Training Area/Old Landfill
- **Figure 2.** Site 3 - Dry Well
- **Figure 3.** Site 4 - Drainage Ditch Area

These preliminary site investigations were a broad based screening effort to determine the general presence of target volatile organic compounds at each of the three subject sites. The Soil Vapor/Groundwater Screening Survey consisted of the following tasks:

- Development of a Field Sampling Plan (TETC)
- Field sampling of soil-gas and shallow groundwater for target VOCs (EnviroSurv, Inc.)
- Mobile laboratory analysis of soil-gas and shallow groundwater (EnviroSurv, Inc.)
- Validation, reduction and interpretation of mobile laboratory data (TETC and EnviroSurv, Inc.)
- Preparation of a Site Investigation Report (TETC and EnviroSurv, Inc.)

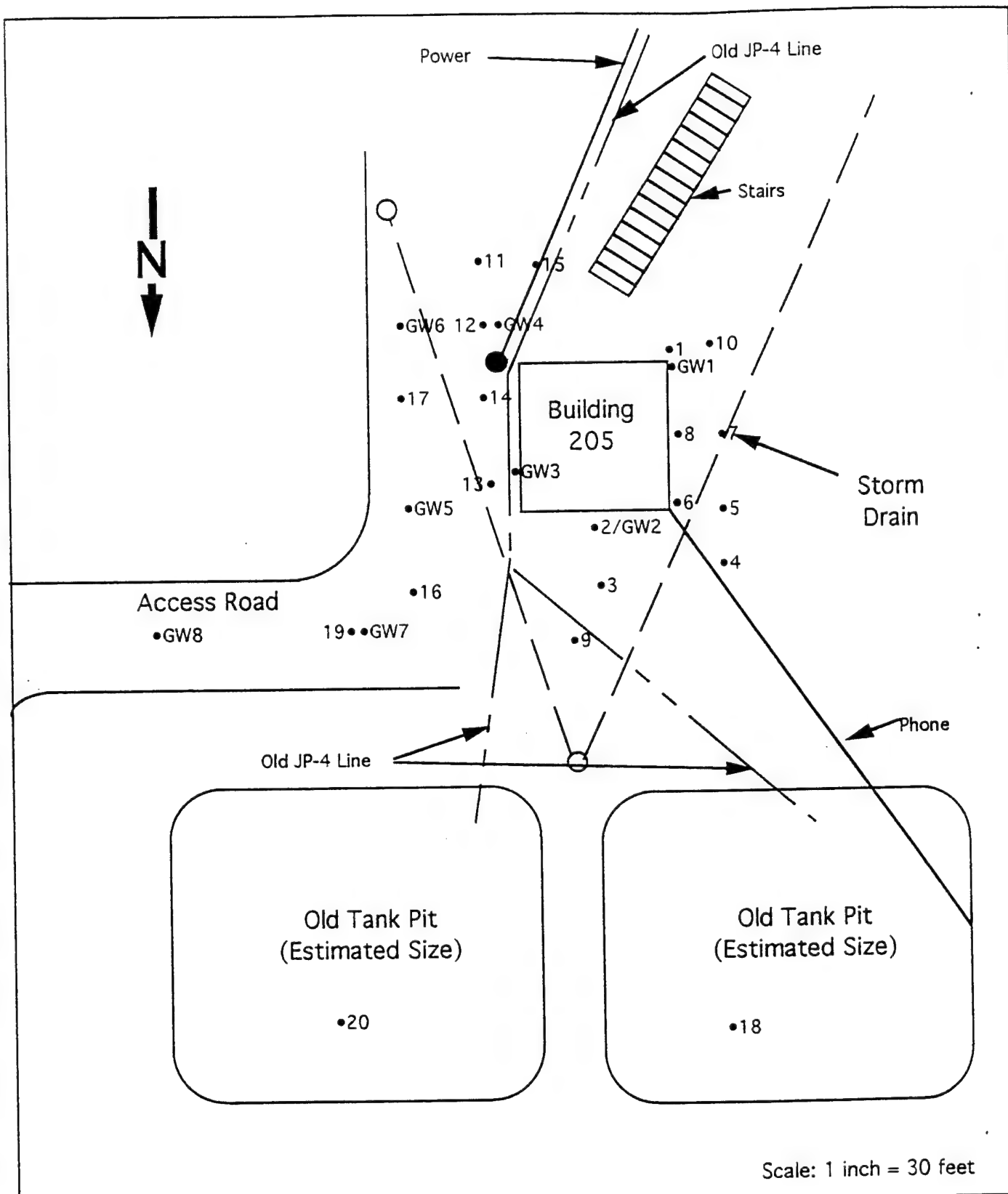
EnviroSurv, Inc. provided the following services in support of TETC's Preliminary Site Investigations at the Burlington, Vt ANGB:

- Collection of 133 soil-gas samples and on-site analysis for BTEX and target chlorinated compounds at three different sites; 72 samples at Site 1, 21 samples at Site 3 and 40 samples at Site 4.
- Collection of 18 groundwater screening samples and on-site analysis for BTEX and target chlorinated compounds at two different sites; 8 samples at Site 3 and 10 samples at Site 4.
- Collection and analysis of approximately 10% QA/QC samples, including instrument and syringe blanks, and field and laboratory duplicates.
- Development and submittal of draft data tables and sample location maps for the three survey sites.
- Development and submittal of this Project Report which includes documentation of all field sampling and mobile laboratory procedures, and a general interpretation of data.



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Figure 1. Site 1-Vermont ANG Fire Department Training Area/Old Landfill



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 Fairfax, VA 22031

Figure 2. Site 3-Vermont ANG Dry Well

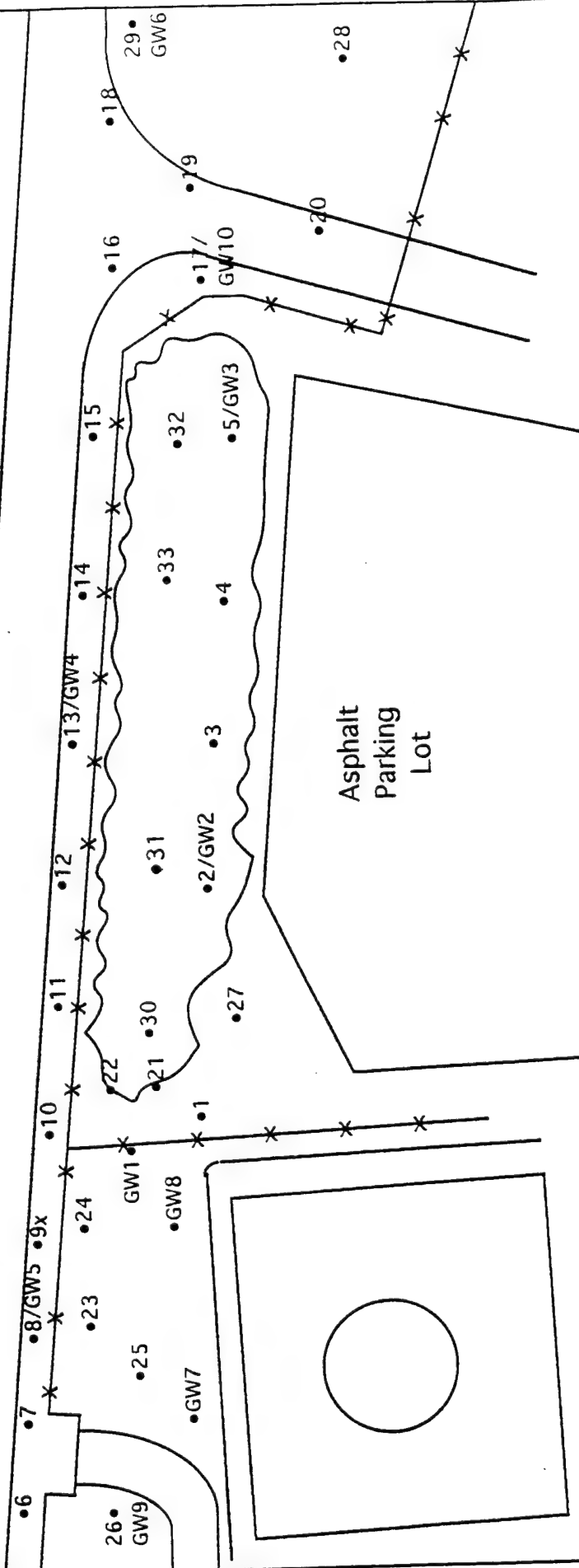


Figure 3. Site 4-Vermont ANG Drainage Ditch Area

**ENVIROSURV, INC.**  
2800-C Dorr Ave.  
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Prepared By:

## Major Findings

- Notable contamination by volatile petroleum hydrocarbon compounds, as indicated by soil-gas data, was found at all three sites investigated. Permeable sandy soil conditions were routinely encountered. As a result, soil-gas data should represent a "significant" radius of influence for collection. "Hot spot" areas were identified for further characterization during the groundwater screening phase of this investigation, and for future soil-boring and monitoring well installation work.

- Only extremely low (generally <1 ppm) levels of target chlorinated solvents were "sporadically" detected in soil-gas at two of the three sites investigated.

- Shallow groundwater was found to be "significantly" impacted at both sites investigated. As with soil-gas, the primary target compounds detected were petroleum hydrocarbons.

The soil-gas and limited groundwater screening results reported herein were utilized by TETC to select confirmatory soil boring and groundwater monitoring well locations during the next phase of investigation.

## II PROJECT OBJECTIVES

Soil-gas sampling techniques are of two varieties: Passive and Active. Passive surveys which utilize a static trapping device implanted in the ground have the limitation that a long period of time is required for sample collection and analysis. Active surveys, on the other hand, provide results in near real-time and sampling plans can be modified as results become available from the on-site mobile laboratory. The "active" approach was employed during this investigation providing immediate field results for the detection of potentially "significant" target compound contamination.

All soil-gas and shallow groundwater samples were analyzed for the following target VOC compounds:

	<u>Quantitation Limits</u>	
	soil-gas, µg/L (ppm)	water, µg/L (ppb)
• Benzene	0.25 ppm	2.0 ppb
• Toluene	0.25 ppm	2.0 ppb
• Ethylbenzene	0.25 ppm	2.0 ppb
• Total Xylenes	0.25 ppm	2.0 ppb
• Total FID Volatiles	3.0 ppm	30 ppb
• 1,1-Dichloroethene (1,1-DCE)	0.1 ppm	2.0 ppb
• trans-1,2-Dichloroethene (t-1,2-DCE)	0.1 ppm	2.0 ppb
• cis-1,2-Dichloroethene (c-1,2-DCE)	0.1 ppm	2.0 ppb
• 1,1,1-Trichloroethane (1,1,1-TCA)	0.01 ppm	0.2 ppb
• Trichloroethene (TCE)	0.01 ppm	0.2 ppb
• Tetrachloroethene (PCE)	0.01 ppm	0.2 ppb



### III FIELD SAMPLING AND MOBILE LABORATORY PROCEDURES

#### Sampling Survey Design

TETC surface reconnaissance of the three "suspect" sites helped in the soil-gas and shallow groundwater sampling survey design. Factors which indicated possible environmental damage, such as stressed vegetation or other unnatural features related to anthropogenic sources (e.g., drainage ditches, drums, landfill areas, etc.) were identified. In general, soil-gas sample locations followed an evenly spaced grid. A lesser number of locations, however, were chosen according to specific site features as directed by TETC's on-site representative.

#### Field Activities

EnviroSurv, Inc.'s two-man probe sampling and mobile laboratory analysis team documented all field activities on both Field Sample Log Sheets and in Field Laboratory Notebooks. Information pertinent to sample collection (e.g., depth, volume, etc.) and analysis (e.g., QA/QC, target compounds identified, etc.) were recorded.

#### Field Sampling Procedures and QA/QC Protocols

**Probe Placement:** Soil-gas and groundwater sampling probes are constructed of 1/2-inch I.D. hardened steel in 3-foot lengths. The probe rods were driven into the soil by a hydraulic cylinder/percussion hammer unit mounted in the back of a 4-wheel-drive pickup truck. Probes were removed using the same hydraulic system. Asphalt and/or concrete penetration was required at some of the sample locations. A rotary drill attached to the hydraulic probe was used to auger a 1.5 inch pilot hole through up to 4-inches of pavement. The 3/4-inch outside diameter probe rod was then placed in the pilot hole and driven to depth.

**Sample Collection:** All information pertinent to the collection of field samples can be found on the Soil-Gas and Shallow Groundwater Sampling Log Sheets in Appendix A.

**Soil-Gas Sample Collection:** Once soil-gas probes were driven to the desired sampling depth (4 to 20' bgs), "post run" polypropylene tubing was attached to the lead rod via a threaded sample cap with o-ring (to prevent vacuum leakage). The dedicated sample line was then attached to the vacuum volume system located in the probe truck. A minimum of three tubing/sample container volumes (e.g., 2 liters) were purged before a sample was collected in a glass gas-sample bulb with Teflon stopcocks. Once filled, the sample bulbs were delivered immediately to the on-site laboratory for analysis. The estimated time from sample extraction to gas chromatograph injection was usually less than one to two hours. Collection of soil gas in glass bulbs permitted sample dilutions and laboratory duplicate analyses to be run from the same sample location, as required.

**Groundwater Sample Collection:** A pilot hole was driven to the desired sample depth using a 1-inch O.D. probe rod or 3-foot long slotted well point. At some locations water was sampled directly from the well point screen. At other locations probe rods were pulled and 1/2-inch I.D. PVC screen was temporarily installed for sampling. Once the well point or slotted screen was in place, "dedicated" polypropylene tubing, fitted with a small diameter foot-valve pump was inserted. Water samples were then containerized in 40 ml vials cleaned to EPA specifications, and were delivered immediately to EnviroSurv, Inc.'s on-site mobile laboratory for analysis.

Field Duplicates: Two glass gas-sample bulbs or 40 ml VOA vials were filled at approximately 10% of the sampling points and treated as field duplicates to check the precision of sample collection procedures.

Equipment Decontamination: Dedicated polypropylene sampling line was used at each individual soil-gas and/or groundwater sample location. Once used, the tubing was discarded. All non-expendable equipment which came in contact with extracted soil-vapor or shallow groundwater samples was thoroughly cleaned before re-use. Decontamination procedures included an initial scrub and wash using wire brushes and alconox detergent. After washing, equipment was rinsed with deionized water and allowed to air dry.

### Field Laboratory Procedures and QA/QC Protocols

Instrumentation: All samples collected during the Burlington, VT ANGB Survey were analyzed on a Shimadzu 14A laboratory-grade GC equipped with both Flame Ionization and Electron Capture Detectors (FID/ECD). The analytical column used was a 105 meter x 0.53 mm Restek R<sub>tx</sub>-volatiles megabore capillary column. The GC was controlled by a Shimadzu CR4-AX integrating computer equipped with a 20 MB hard disk for method and data storage, and a thermal transfer printer for hard-copy output.

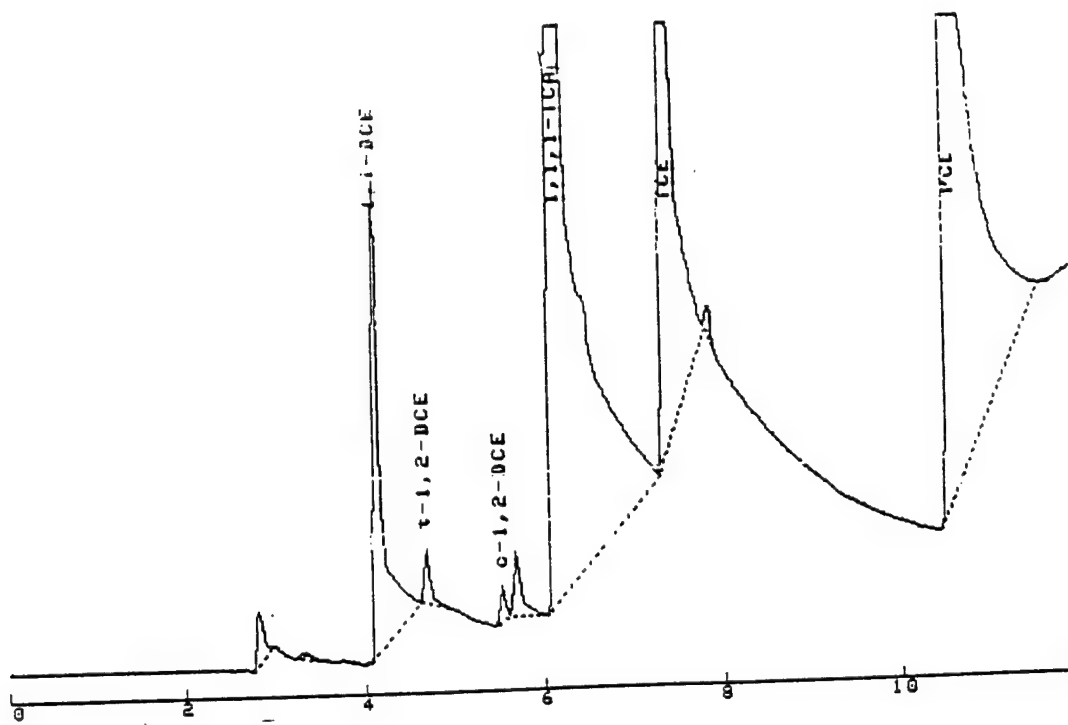
Sample Quantitation: The FID/ECD results for target aromatic and chlorinated volatiles were determined by calculating the areas of individual chromatogram peaks. Peaks resulting from injection disturbances (e.g., air peak) were carefully separated from the individual early eluting volatile peaks. The reported results for BTEX and chlorinated hydrocarbons in soil gas and water were quantitated using the response factors obtained from certified commercial standards. The total FID volatiles result was obtained by applying the response factor of toluene to all unknown peaks in the chromatogram. Because the response factors of all individual FID volatile compounds are unknown, the "total volatiles" result is semi-quantitative and is intended for use as a comparative technique among the samples.

Instrument Calibration: HAZWRAP level B QA/QC protocols were followed for both soil-gas and groundwater calibrations. The gas chromatograph was initially calibrated for soil-gas and water using a certified BTEX gas standard and/or field-prepared vapor or aqueous standards for the eleven target compounds of interest (See **Figure 4**. - Example Standards Chromatograms). All standards preparation was documented in the field laboratory log book and is traceable back to certified commercial standards. Retention times of standards were used to identify the chromatogram peaks and response factors were used to calculate concentrations for target compounds of interest.

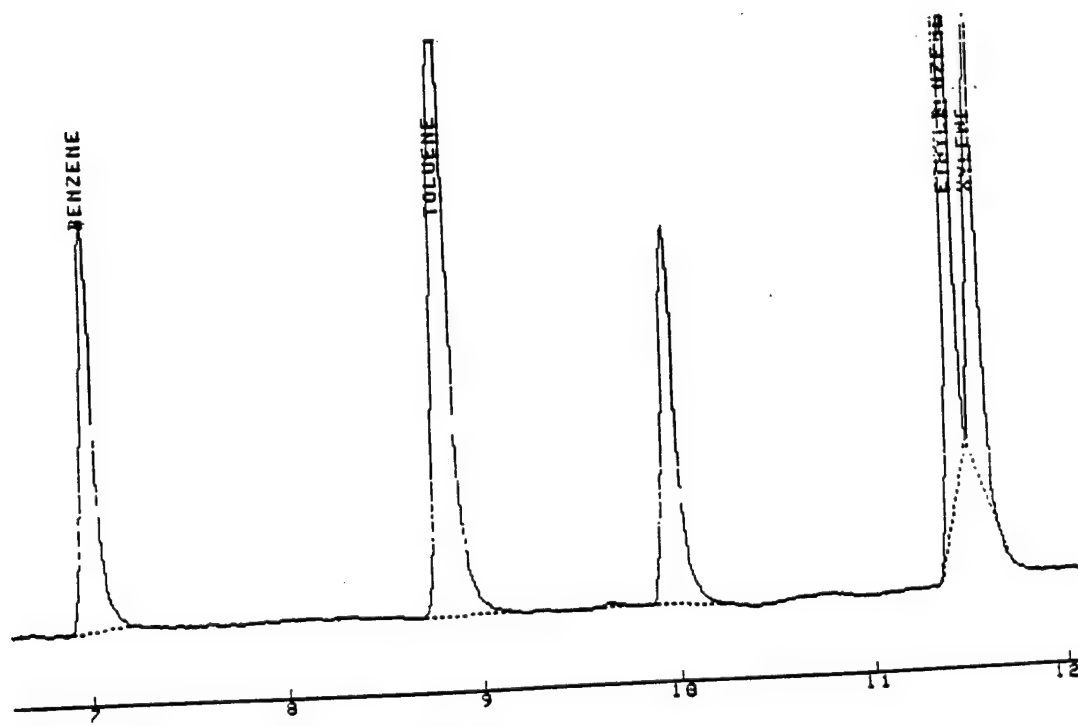
Laboratory Blanks: A method blank was run at the beginning of each day to check for potential contaminants in the analytical system. The blank was taken by withdrawing a headspace sample from an empty glass soil-gas bulb or 40 ml VOA vial containing deionized water. The blank was injected into the gas chromatograph in the same way as all other samples.

Laboratory Duplicates: Approximately 10% laboratory duplicate samples were injected to check the analytical precision of the method.

Sample Preparation: Soil-gas samples were received in the laboratory in 250 ml glass gas



Target Chlorinated Compound Standard



BTEX Standard

Figure 4. Example Standards Chromatograms

sampling bulbs. A sample was withdrawn through the septum using a syringe and injected directly into the GC. Water samples were received in the laboratory in completely filled 40 ml VOA vials. Ten mls were subsequently decanted, shaken for one minute, heated at 90° C for 30 minutes and a headspace sample was injected using a gas-tight syringe. See Appendix B for EnviroSurv SOP "Volatile Organics in Water by Manual Headspace".

#### IV GENERAL INTERPRETATION OF FIELD SAMPLING AND MOBILE LABORATORY ANALYTICAL RESULTS

The following media were sampled to determine the nature and extent of possible contamination by target volatile constituents.

- 133 soil-gas samples (plus approximately 10% QA/QC data) collected from three sites.

- 18 groundwater samples collected from two of three sites.

Sampling locations and corresponding soil-gas and shallow groundwater results for the three sites are included in Figures 5 through 9. Tables 1&2 contain all soil-gas and groundwater screening data, including QA/QC results.

- Site 1 - Fire Department Training Area/Old Landfill (Figure 5) - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 21,000 ppm Total Volatiles. Significant "hits" for the most part appeared within and in close proximity to former burn pads. One additional anomaly in the 100 ppm range was detected in the center of the "old landfill."

Low-level chlorinated solvents (< 2 ppm TCA) were detected in soil-gas at several locations within and along the northwestern boundary of the "old landfill." DCE was detected at sample location SG-1, within the burn pad. Its presence indicates that solvents were likely burned along with petroleum hydrocarbons for fire training purposes.

No groundwater samples were collected at Site 1. Nonetheless, deep (> 10') soil-gas data, from sandy soils in close proximity to the shallow water table, suggest that groundwater has likely been impacted by historical burning and land disposal activities.

- Site 3 - Dry Well (Figures 6&7) - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 27,000 ppm Total Volatiles. Significant "hits" for the most part were detected in close proximity to Building #205. There appears to be some association between sample concentration and the location of subsurface storm drains and old JP-4 distribution pipelines. Total Volatile results from one sample in each of the "old tank pits" indicated the potential for residual soil and/or groundwater contamination in these areas.

Low-level chlorinated solvents (< 1 ppm TCE and PCE) were detected at several locations west of Building #205 (e.g., 3SG-1, 3SG-7 & 3SG-8). Their presence may indicate some relationship between the numerous subsurface drains and utility trenches, and contaminant movement and distribution.

Significant groundwater results (up to 84,000 ppm Total FID volatiles) were detected throughout the entire Site 3 area. At every location, benzene was quantitated at orders of

magnitude above the Federal Safe Drinking Water Act (SDWA) Maximum Concentration Level (MCL) of 5 ppb, a common health and regulatory corrective action benchmark. It appears that groundwater has been severely impacted at Site 3. The significant dissolved-phase concentrations detected indicate the strong likelihood for free product migration.

- **Site 4 - Drainage Ditch Area (Figures 8&9)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 17,000 ppm Total Volatiles. Significant "hits" were found primarily west of the drainage ditch. Contamination appears to trend off-site in a northerly direction from 4SG-8, 4SG-9, 4SG-10 and 4SG-11. A second 100 ppm range anomaly occurs along the axis of the trench in an east/west direction.

No chlorinated solvents were detected in soil-gas at Site 4.

Significant groundwater results (up to 47,000 ppm Total FID volatiles) were detected throughout much of the Site 4 area. Maximum concentrations correlated well with soil-gas data, and were located in the area west of the drainage ditch. At eight of ten locations, benzene was quantitated at levels from one to six orders of magnitude above the SDWA MCL of 5 ppb. Similar to Site 3, it appears that groundwater has been severely impacted at Site 4. The dissolved-phase concentrations detected also indicate the strong likelihood for free product migration beneath this portion of the base.

Table 1. Soil Gas Data

Sample ID	Depth , ft.	Soil gas results are expressed as ppm								Total		
		1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TOE	PQE	Benzene	Toluene	Ethylbenzene	Xylenes	Volatiles
Soil Gas												
1SG 1	5	31	<0.1	<0.1	<0.01	<0.01	<0.01	2100	1600	2700	3500	21000
1SG 1	9	38	<0.1	<0.1	<0.01	<0.01	<0.01	2000	1500	3000	3100	20000
1SG 1 F	9	39	<0.1	<0.1	<0.01	<0.01	<0.01	2100	1600	3000	3200	20000
1SG 2	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	5	4.1
1SG 2	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	4	1.1	0.65	3.1	120
1SG 2	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	2.4	<3.0
1SG 2 F	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 3	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	22	4.4	<0.25	9.5	160
1SG 3 L	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	29	5.6	<0.25	12	210
1SG 3	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	16	2.9	<0.25	9.2	130
1SG 4	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 4 L	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 5	7	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	5.8	2.9	4.8	3.4	50
1SG 6	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 7	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	630	480	470	370	9800
1SG 7 L	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	630	480	550	390	10000
1SG 8	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	340	380	500	400	6000
1SG 9	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.25	4	<0.25	6.6	45
1SG 10	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 11	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 12	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	0.53	<0.25	0.78	8.9
1SG 13	8	<0.1	<0.1	<0.1	<0.01	<0.01	0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 14	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 15	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.6	3.8	<0.25	19	170
1SG 16	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	4.2	31
1SG 17	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	1	2.4	<0.25	10
1SG 18	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 19	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	0.33	<0.25	0.65	11
1SG 20	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	420	490	410	360	11000
1SG 21	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	6.1	2.4	5.6	4.5	190
1SG 22	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.34	<0.25	0.79	<0.25	11
1SG 23	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 23 L	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	3.8
1SG 24	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	700	150	740	50	15000
1SG 25	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	100	52	340	40	2400

Table 1. Soil Gas Data (Con't.)

Sample ID	Depth, ft.	Soil gas results are expressed as ppm										Total Xylenes	Total Volatiles
		1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TOE	PCE	Benzene	Toluene	Ethylbenzene			
1SG 26	10	<0.1	<0.1	<0.1	0.067	<0.01	<0.01	<0.25	<0.25	1	<0.25	7.7	
1SG 27	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 27 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 28	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	44	2.6	30	27	440	
1SG 29	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 30	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	16	1.5	17	22	170	
1SG 31	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.29	<0.25	<0.25	1.4	9.8	
1SG 32	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.1	0.42	6.2	7.0	29	
1SG 33	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 34	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 35	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.85	<0.25	2.7	2.7	14	
1SG 36	9	<0.1	<0.1	<0.1	<0.01	<0.01	0.01	770	250	1000	1300	15000	
1SG 37	9	<0.1	<0.1	<0.1	0.051	<0.01	<0.01	<0.25	<0.25	1.7	1.4	6.6	
1SG 38	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 39	10	<0.1	<0.1	<0.1	0.016	<0.01	<0.01	<0.25	<0.25	1.6	1	7.3	
1SG 40	9	<0.1	<0.1	<0.1	0.52	<0.01	<0.01	<0.25	<0.25	1.9	1.4	7.8	
1SG 41	10	<0.1	<0.1	<0.1	1.7	<0.01	<0.01	6.0	10	170	150	660	
1SG 42	10	<0.1	<0.1	<0.1	0.91	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 43	10	<0.1	<0.1	<0.1	0.025	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 44	6	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	48	4.4	40	51	470	
1SG 45	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 45 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 45 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 46	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	0.83	6.2	
1SG 47	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 48	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 49	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 49 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 50	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	0.64	<0.25	3.5	
1SG 51	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 51 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 52	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 52 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 52 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 53	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	0.71	3.1	
1SG 54	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	



Table 1. Soil Gas Data (Con't.)

Sample ID	Depth, ft.	Soil gas results are expressed as ppm										Total Xylenes	Total Volatiles
		1,1-DCE	I-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TOE	POE	Benzene	Toluene	Ethylbenzene			
1SG 55	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 55 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 56	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 57	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 57 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 58	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 58 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 59	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 60	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 61	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 62	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.36	<0.25	<0.25	0.33	4.6	
1SG 63	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 64	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 64 F	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	4.3	
1SG 65	14	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 66	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 66 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
1SG 67	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.7	<0.25	2.6	1.1	20	
3SG 1	5	<0.1	<0.1	<0.1	<0.01	<0.01	0.028	<0.25	<0.25	<0.25	<0.25	<3.0	
3SG 1 L	5	<0.1	<0.1	<0.1	<0.01	<0.01	0.040	<0.25	<0.25	<0.25	<0.25	<3.0	
3SG 1	10	<0.1	<0.1	<0.1	<0.01	0.17	0.06	2600	3700	1400	5300	27000	
3SG 1 L	10	<0.1	<0.1	<0.1	<0.01	0.17	0.048	1900	1900	1300	4700	26000	
3SG 2	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	820	230	260	730	17000	
3SG 3	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	2	1.4	3.4	3.4	63	
3SG 3 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.8	1.4	2.4	3.0	61	
3SG 4	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
3SG 5	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	33	1.1	13	2.0	680	
3SG 6	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	620	98	320	300	12000	
3SG 7	10	<0.1	<0.1	<0.1	<0.01	0.041	0.012	190	600	260	1000	18000	
3SG 8	10	<0.1	<0.1	<0.1	<0.01	0.074	0.021	900	640	300	1100	19000	
3SG 9	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.2	0.73	6.4	9.0	26	
3SG 10	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	330	200	250	320	10000	
3SG 11	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	1.1	0.69	4.3	
3SG 12	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	770	430	800	900	1600	
3SG 13	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	300	360	700	800	17000	
3SG 14	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	800	420	730	680	17000	

Table 1. Soil Gas Data (Con't.)

Sample ID	Depth, ft.	Soil gas results are expressed as ppm										Total Xylenes	Total Volatiles
		1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TOCE	POE	Benzene	Toluene	Ethylbenzene			
3SG 15	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	50	21	19	8.0	540	
3SG 16	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	4.2	<0.25	1.1	0.72	36	
3SG 17	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
3SG 18	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	18	0.93	5.1	2.5	140	
3SG 19	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	0.41	0.27	5.7	
3SG 20	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	2.6	<0.25	0.44	0.67	20	
4SG 1	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
4SG 1	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
4SG 1	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	750	150	180	20	15000	
4SG 2	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	33	4.9	75	73	410	
4SG 3	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	3.3	2.1	200	150	490	
4SG 4	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
4SG 5	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	17	4.4	9.7	8.9	170	
4SG 6	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.81	0.38	1.5	1.9	13	
4SG 7	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.1	<0.25	2.5	1.6	15	
4SG 8	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	850	140	260	260	16000	
4SG 9	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	250	190	390	360	17000	
4SG 10	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	820	170	95	280	15000	
4SG 11	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	730	120	110	140	12000	
4SG 12	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.44	<0.25	1.0	1.0	9.4	
4SG 13	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
4SG 13 L	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0	
4SG 14	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	7.8	0.45	2.9	2.7	62	
4SG 15	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.38	<0.25	<0.25	<0.25	5.8	
4SG 15 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.53	<0.25	<0.25	<0.25	7.1	
4SG 16	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.70	<0.25	<0.25	0.38	7.1	
4SG 16 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.76	<0.25	<0.25	0.43	8.2	
4SG 16	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	19	1.1	1.5	2.5	150	
4SG 17	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.65	<0.25	<0.25	0.35	<3.0	
4SG 17	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	20	1.4	1.7	4.1	160	
4SG 18	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	3.6	
4SG 19	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	5.5	3.1	14	
4SG 20	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.49	<0.25	0.31	<0.25	5.8	
4SG 21	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.26	<0.25	0.33	<0.25	<3.0	
4SG 21	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	330	70	46	81	7600	
4SG 22	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	790	150	84	150	14000	

Table 1. Soil Gas Data (Con't.)

Sample ID	Depth, ft.	Soil gas results are expressed as ppm										Total	
		1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TOE	PCE	Benzene	Toluene	Ethylbenzene	Xylenes	Volatiles	
4SG 22	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	790	150	110	150	150	14000
4SG 23	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	890	180	180	100	100	16000
4SG 24	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	820	120	170	100	100	15000
4SG 25	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	240	170	300	220	17000	
4SG 26	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	4.9	1.4	4.0	4.3	83	
4SG 27	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	18	0.74	<0.25	2.7	140	
4SG 27 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	30	1.2	0.28	5.0	230	
4SG 28	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.27	<0.25	<0.25	0.34	3.3	
4SG 28 L	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.43	<0.25	<0.25	0.39	4.7	
4SG 28	20	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.65	<0.25	0.72	0.38	7.7	
4SG 29	20	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.69	<0.25	0.26	0.39	7.1	
4SG 30	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	230	96	110	210	8600	
4SG 31	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.93	<0.25	1.9	1.3	22	
4SG 32	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.34	<0.25	0.37	0.33	5.8	
4SG 33	4	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	29	7.2	20	20	900	

L= Lab Duplicate  
F= Field Duplicate

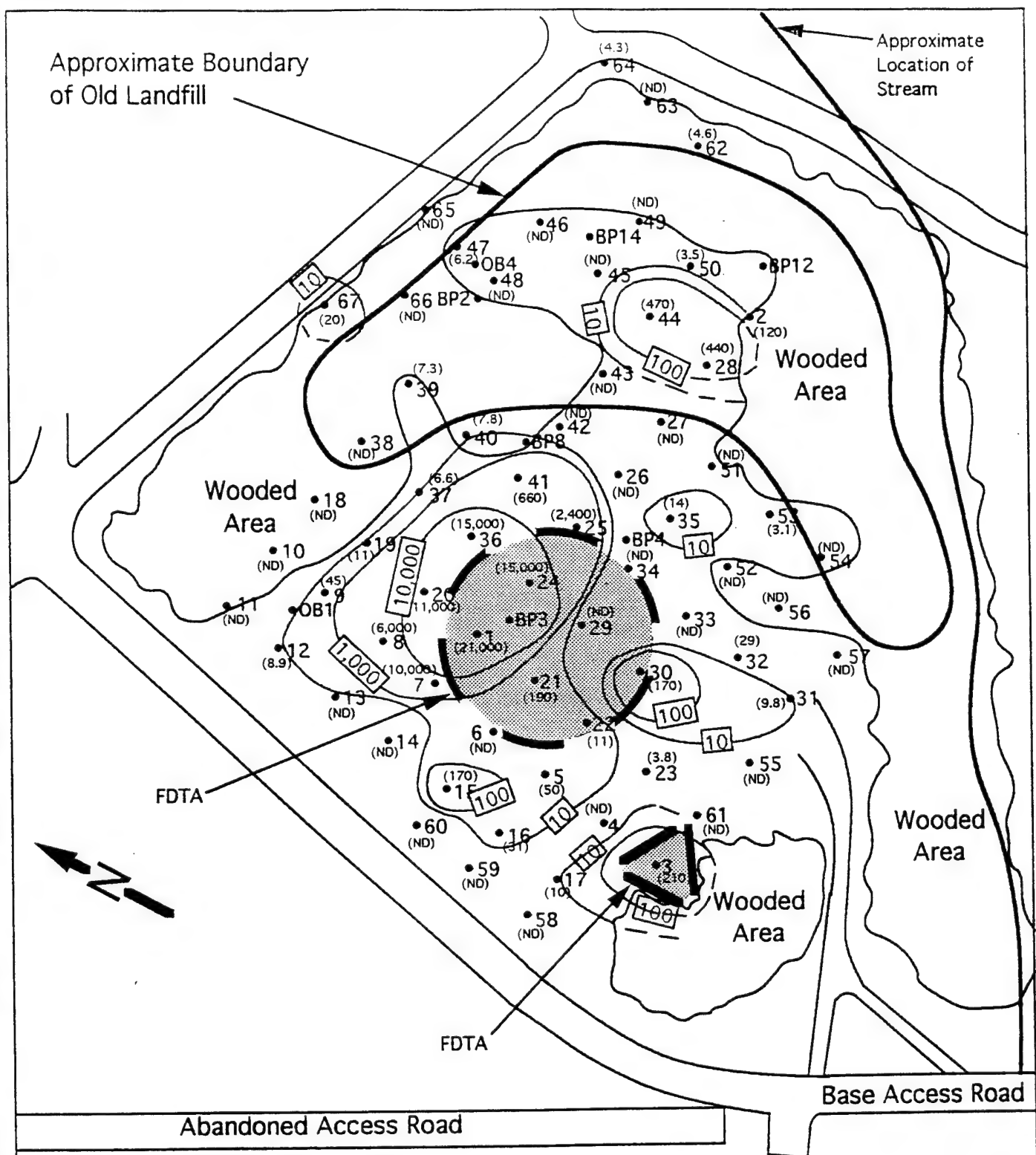
Table 2. Groundwater Data

Sample ID	Water results are expressed as ppb except where indicated										Total	Total
	1,1-DCE	c-1,2 DCE	1,1,1 TCA	TOE	POE	Benzene	Toluene	Ethylbenzene	Xylenes	Volatiles		
Waters												
3GW 1*	16.5	<2.0	<2.0	<0.2	<0.2	<0.2	4000	4800	59	1800	4800	
3GW 2*	19	<2.0	<2.0	<0.2	<0.2	<0.2	49	11	1.1	9.7	310	
3GW 2 L *	19	<2.0	<2.0	<0.2	<0.2	<0.2	57	9	8.7	8.4	350	
3GW 3*	19	<2.0	<2.0	<0.2	<0.2	<0.2	3000	1800	5000	500	84000	
3GW 4*	19	<2.0	<2.0	<0.2	<0.2	<0.2	14000	18000	5000	340	81000	
3GW 5 *	22	<2.0	<2.0	<0.2	<0.2	<0.2	100	11	1.0	17	700	
3GW 6	21	<2.0	<2.0	<0.2	<0.2	<0.2	230	48	23	37	200	
3GW 7	24	<2.0	<2.0	<0.2	<0.2	<0.2	4700	1900	1000	900	1900	
3GW 8*	24	<2.0	<2.0	<0.2	<0.2	<0.2	41	7.4	6.9	3.7	23	
4GW 1 *	21	<2.0	<2.0	<0.2	<0.2	<0.2	540	98	700	96	9700	
4GW 2	30	<2.0	<2.0	<0.2	<0.2	<0.2	29	6.4	1.7	7.1	220	
4GW 2 L	30	<2.0	<2.0	<0.2	<0.2	<0.2	40	9.6	2.3	9.3	280	
4GW 3	30	<2.0	<2.0	<0.2	<0.2	<0.2	5.7	4.7	0.94	0.27	40	
4GW 4	24	<2.0	<2.0	<0.2	<0.2	<0.2	1.9	2.2	1.5	1.8	23	
4GW 5*	24	<2.0	<2.0	<0.2	<0.2	<0.2	9300	500	<2.0	660	47000	
4GW 6	24	<2.0	<2.0	<0.2	<0.2	<0.2	<2.0	<2.0	<2.0	<2.0	36	
4GW 6 L	24	<2.0	<2.0	<0.2	<0.2	<0.2	<2.0	<2.0	<2.0	<2.0	15	
4GW 7	24	<2.0	<2.0	<0.2	<0.2	<0.2	770	330	260	620	6700	
4GW 8*	21	<2.0	<2.0	<0.2	<0.2	<0.2	56	19	53	11	45	
4GW 9	21	<2.0	<2.0	<0.2	<0.2	<0.2	5000	340	400	750	27000	
4GW10	21	<2.0	<2.0	<0.2	<0.2	<0.2	16	0.95	5.8	4.7	130	

L= Lab Duplicate

F= Field Duplicate

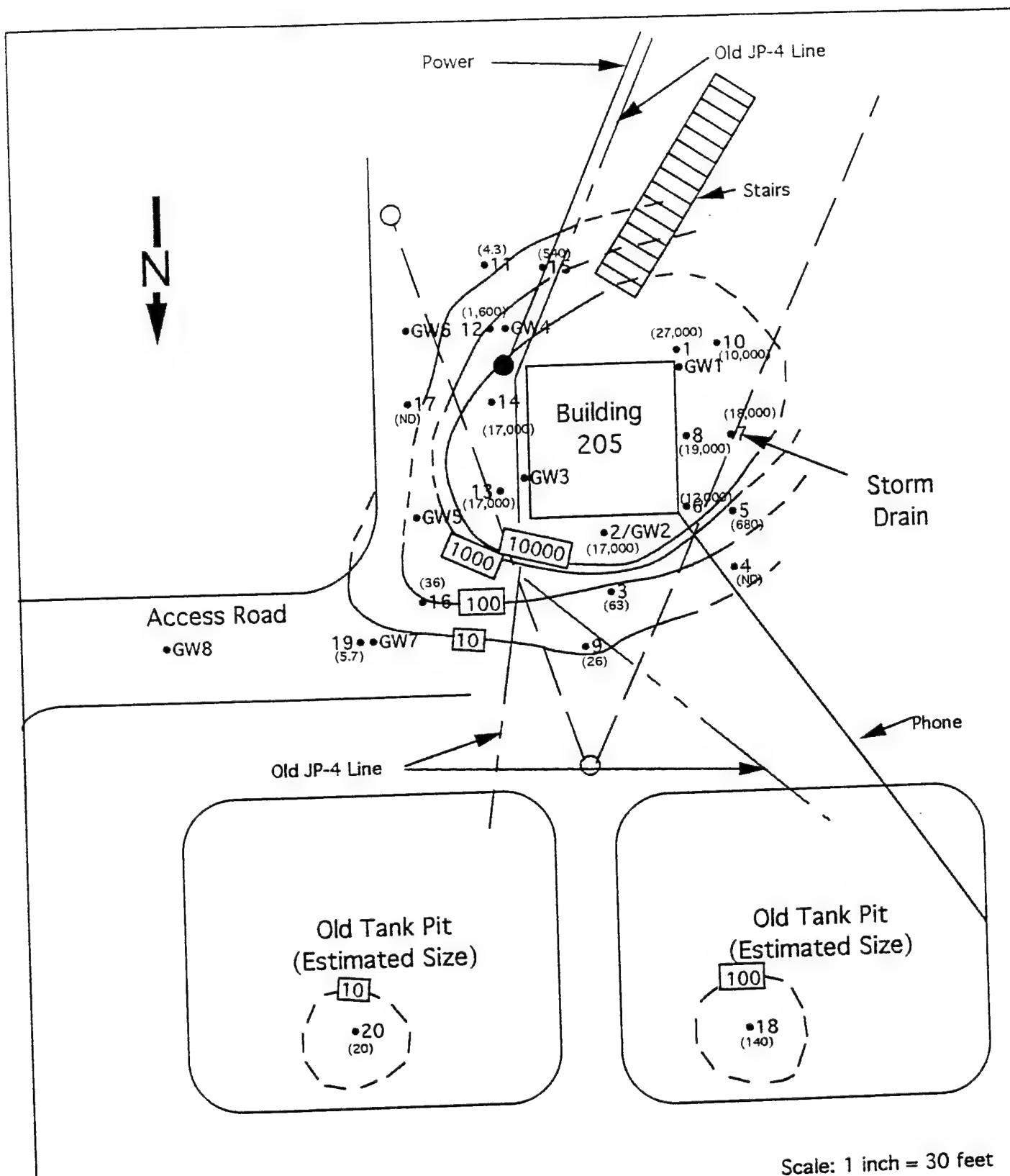
\* VALUES ARE PPM



Scale: 1 inch = 100 feet

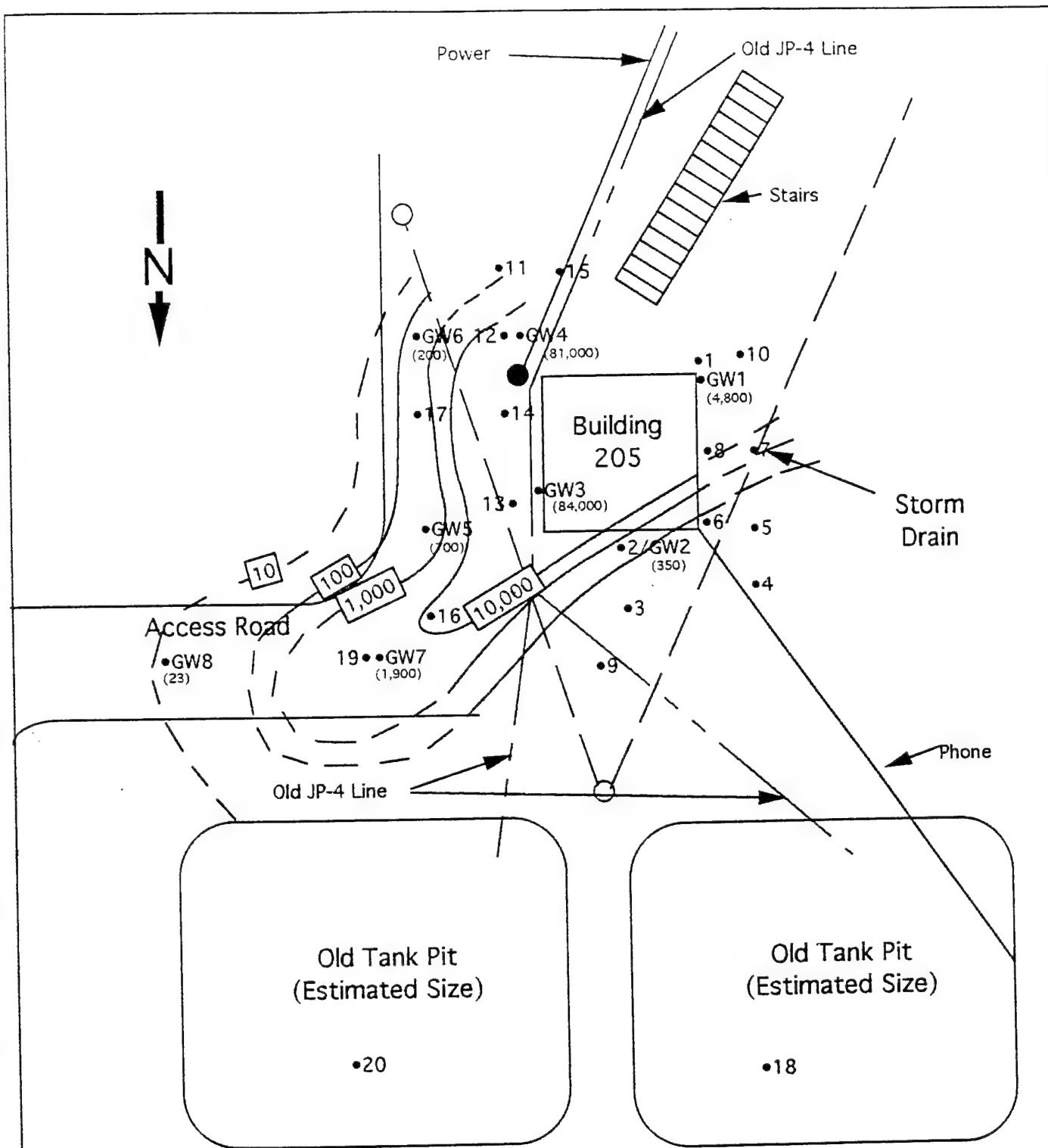
Prepared By: **ENVIROSURV, INC.**  
2800-C Dorr Ave.  
Fairfax, VA 22031

**Figure 5. Site 1-Soil-Gas Results  
(Total FID Volatiles, ppm)**



Prepared By: **ENVIROSURV, INC.**  
 2800-C Dorr Ave.  
 Fairfax, VA 22031

Figure 6. Site 3-Soil Gas Results  
 (Total FID Volatiles, ppm)



Scale: 1 inch = 30 feet

Prepared By: **ENVIROSURV, INC.**  
 2800-C Dorr Ave.  
 Fairfax, VA 22031

Figure 7. Site 3-Groundwater Results  
 (Total FID Volatiles, ppm)

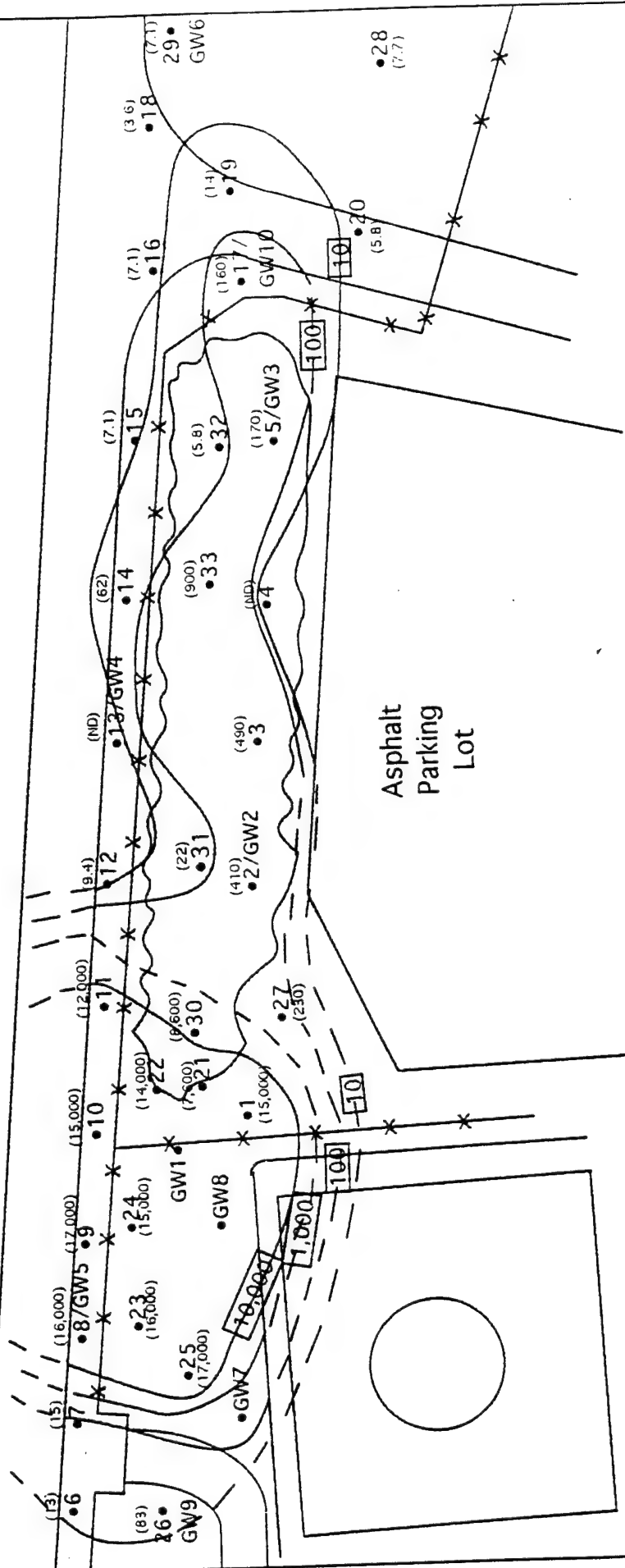


Figure 8. Site 4-Soil Gas Results  
(Total FID Volatiles, ppm)

**ENVIRO SURV, INC.**  
2800-C Dorr Ave.  
Fairfax, VA 22031

Prepared By:



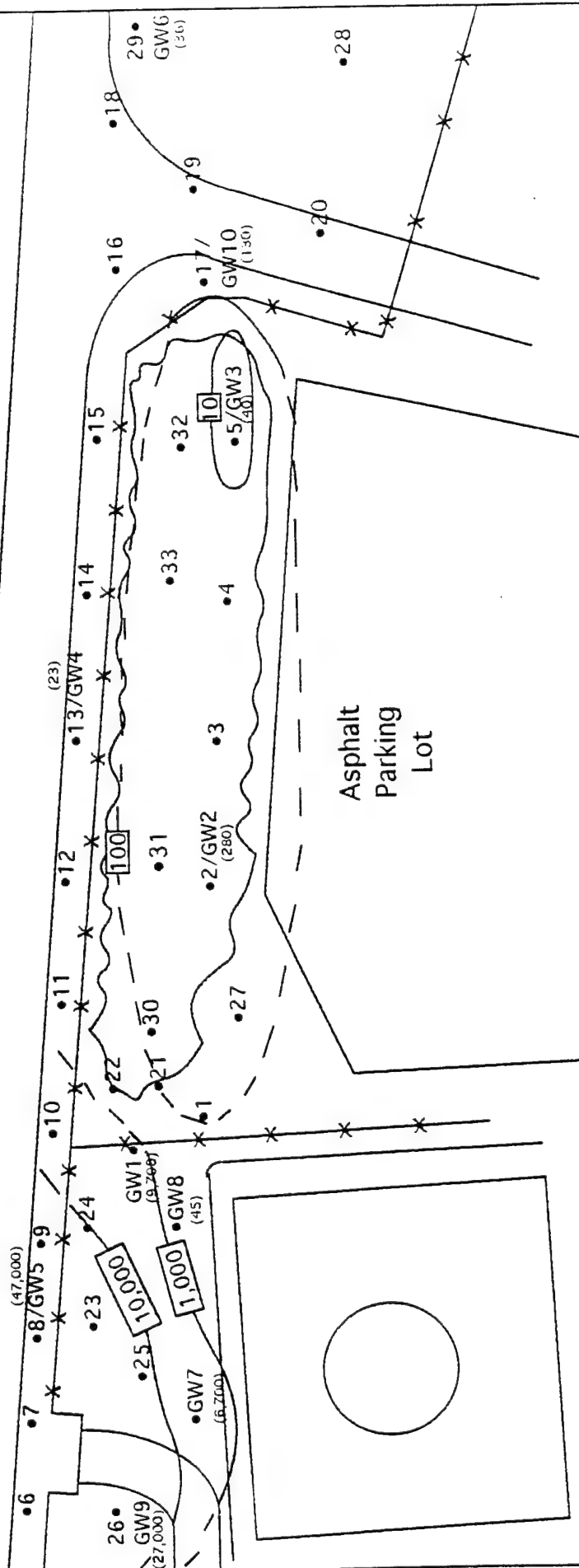
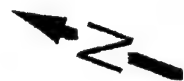


Figure 9. Site 4-Groundwater Results  
(Total FID Volatiles, ppm)

**ENVIROSURV, INC.**  
2800-C Dorr Ave.  
Fairfax, VA 22031

Prepared By:

APPENDIX A  
FIELD DATA LOG SHEETS

CLIENT: <b>TETC</b>	Sheet <b>1</b> of <b>23</b>
LOCATION: <b>Burlington, VT ANGB</b>	Crew Chief <b>J. Olsen</b>
	Unit No. <b>#2</b>
	Job No. _____

Probe Location I.D.	35G1-5	35G1-10	35G1-15	15G1-5	15G1-9	15G2-5
Date:	8/16/94	8/16/94	8/16/94	8/16/94	8/16/94	8/16/94
Time:	11:50	12:04	12:10	3:10	3:25	3:45
Sample Number:	#1	#2		#4	#5	#6
Depth	5 ft	10 ft	15 ft	5 ft	9 ft	5 ft
Purge Vacuum (in./Hg-H <sub>2</sub> O)	15	15		15	15	15
Purge Volume (L.)	2L	2L		2L	2L	2L
Sample Vacuum (in./H <sub>2</sub> O)	9	9		9	9	9
Sample Volume	250ml	250ml		250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec. purge time	30-45 sec. purge time	Water in tubing strong odor < No Sample Taken >	10-20 sec. purge time strong odor from tubing <del>XXXXXXXXXXXXXXXXXXXX</del>	20-30 sec. purge time strong odor from tubing < FIELD DUP >	10-20 sec. purge time

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	Lab Comments:	Sample Shipment:
	Time		
Samples Received By:	Date	On-site lab analysis	Hand Delivered: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Time		Shipped via: <b>N/A</b>
			Date Shipped: <b>N/A</b>
			Shipper's Signature: <b>JEO</b>

CLIENT: <b>TETC</b>		Sheet <b>2</b> of <b>23</b>	
LOCATION: <b>Burlington, VT ANGB</b>		Crew Chief <b>J. Olsen</b>	
		Unit No. <b>#2</b>	
		Job No. _____	

Probe Location I.D.	15G2-10	15G2-15	1-5G3-5	1-5G3-10	1-5G4-10	1-5G6-8
Date:	8/16/94	8/16/94	8/17/94	8/17/94	8/17/94	8/17/94
Time:	3:55	4:05	9:05	9:35	10:25	10:45
Sample Number:	#7	#8	#9	#10	#11	#12
Depth	10ft	15ft	5ft	10ft	10ft	8ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	10-20 sec purge time	FIELD DUP	10-20 sec. purge time	4-5 min purge time 10-20 sec water at 8ft	10-20 sec. purge time water at 8ft

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	N/A	On-site lab analysis	Shipped via: <b>N/A</b>
	Time			Date Shipped: <b>N/A</b>
				Shipper's Signature: <b>JEO</b>

CLIENT: <b>T E T C</b>		Sheet <b>3</b> of <b>23</b>	
LOCATION: <b>Burlington, VT ANGR</b>		Crew Chief <b>J. Olsen</b>	
		Unit No. <b>#2</b>	
		Job No. _____	

Probe Location I.D.	1-56-8-8	156-7-8	156-5-7	156-9-8	1-56-12-8	1-56-13-8
Date:	8/17/94	8/17/94	8/17/94	8/17/94	8/17/94	8/17/94
Time:	11:10	11:20	11:45	1:25	1:40	1:55
Sample Number:	#13	#14	#15	#16	#17	#18
Depth	8ft	8ft	7ft 8ft	8ft	8ft	8ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	10-20 sec purge time	10-20 sec purge time <FIELD DWP>	10-20 sec purge time	"DI TTD"	"DI TTD"

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	N/A	On-site lab analysis	Hand Delivered <input checked="" type="checkbox"/> yes no
	Time			Shipped via: <b>N/A</b>
				Date Shipped: <b>N/A</b>
				Shipper's Signature: <b>JEO</b>

**Soil-Gas Sampling  
Field Log Sheet**

CLIENT: <b>TETC</b>	Sheet <b>4</b> of <b>23</b>
LOCATION: <b>Burlington, VT ANG B</b>	Crew Chief <b>J. Olsen</b>
	Unit No. <b>#2</b>
	Job No. _____

Probe Location I.D.	15G14-8	15G15-8	15G16-8	15G17-8	15G18-8	15G19-8
Date:	8/17/94	8/17/94	8/17/94	8/17/94	8/17/94	8/17/94
Time:	2:20	2:35	2:50	3:30	4:00	4:40
Sample Number:	#19	#20	#21	#22	#23	#24
Depth	8ft	8ft	8ft	70ft	8ft	8ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	125ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DIRTY"	"DIRTY"	"DIRTY"	"DIRTY"	"DIRTY"

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	On-site lab analysis	Sample Shipment:
	Time				
Samples Received By:	Date	N/A			Shipped via: <u>N/A</u>
	Time				Date Shipped: <u>N/A</u>
			Shipper's Signature: <u>JEO</u>		

CLIENT: <b>TETC</b>	Sheet <b>5</b> of <b>23</b>
LOCATION: <b>Burlington, VT ANGB</b>	Crew Chief <b>J. Olsen</b>
	Unit No. <b>#2</b>
	Job No. _____

Probe Location I.D.	15G18-8	15G19-8	1-5G20-8	1-5G21-8	1-5G22-8	1-5G23-8
Date:	8/17/94	8/17/94	8/17/94	8/17/94	8/18/94	8/18/94
Time:	4:40	4:55	5:05	5:20	8:10	8:35
Sample Number:	#25	#26	#27	#28	#29	#30
Depth	8ft	8ft	8ft	8ft	8ft	8ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	125ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen

COMMENT	10-20 sec purge time	"DITTO"	Purge time 10-20 sec slight odor in tubing	Purge time 10-20 sec	"DITTO"	"DITTO"
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**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	N/A	On-site lab analysis	Hand Delivered: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
	Time			Shipped via: <b>N/A</b>
				Date Shipped: <b>N/A</b>
				Shipper's Signature: <b>JTO</b>

CLIENT: <b>TETC</b>		Sheet <u>6</u> of <u>23</u>	
LOCATION: <b>Burlington, VT ANG B</b>		Crew Chief <u>J. Olsen</u>	
		Unit No. <u>#2</u>	
		Job No. _____	

Probe Location I.D.	1-5624-9	1-5625-10	15626-10	15627-10	15628-10	15629-9
Date:	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94
Time:	8:55	9:15	9:35	9:55	10:10	10:40
Sample Number:	#31	#32	#33	#34	#35	#36
Depth	9ft	10ft	10ft	10ft	10ft	9ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO" <FIELD DUP>	10-20 sec purge time	"DITTO"

**CHAIN OF CUSTODY**

Samples Relinquished By:		Lab Comments: <b>On-site lab analysis</b>	Sample Shipment:	
Date	<u>N/A</u>		Hand Delivered:	<u>yes</u> no
Time	<u>N/A</u>		Shipped via:	<u>N/A</u>
Samples Received By:			Date Shipped:	<u>N/A</u>
Date	<u>N/A</u>	Shipper's Signature:		
Time	<u>N/A</u>	<u>JEO</u>		



**Soil-Gas Sampling  
Field Log Sheet**

CLIENT: <b>TETC</b>	Sheet <b>7</b> of <b>23</b>
LOCATION: <b>Burlington, VT ANG5</b>	Crew Chief <b>J. Olsen</b>
	Unit No. <b>#2</b>
	Job No.

Probe Location I.D.	15G30-9	15G31-10	15G32-10	15G33-10	15G34-10	15G46-10
Date:	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94
Time:	10:50	11:10	11:25	11:40	1:15	1:35
Sample Number:	#37	#38	#39	#40	#41	#42
Depth	9ft	10ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

**CHAIN OF CUSTODY**

Samples Relinquished By:	Lab Comments:	Sample Shipment:
Date <b>N/A</b>	<b>On site lab analysis</b>	Hand Delivered: <b>yes</b> no
Time <b>N/A</b>		Shipped via: <b>N/A</b>
Samples Received By:		Date Shipped: <b>N/A</b>
Date <b>N/A</b>		Shipper's Signature: <b>JEO</b>
Time <b>N/A</b>		

CLIENT: <b>TETC</b>		Sheet <b>8</b> of <b>23</b>	
LOCATION: <b>Burlington, VT ANG3</b>		Crew Chief <b>J. Olsen</b>	
		Unit No. <b>#2</b>	
		Job No.	

Probe Location I.D.	15640-9 <del>15636-9</del>	15636-9	15639-10	15637-9	15635-10	15642-10
Date:	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94
Time:	1:50	2:10	2:40	3:00	3:12	3:45
Sample Number:	#43	#44	#45	#46	#47	#48
Depth	9ft	9ft	9ft	9ft	10ft	10ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec. purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments: <b>On-site lab analysis's</b>	Sample Shipment: Hand Delivered: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no Shipped via: <b>N/A</b> Date Shipped: <b>N/A</b> Shipper's Signature: <b>JEO</b>
	Time			
Samples Received By:	Date	N/A		
	Time			

CLIENT: <b>TETC</b>	Sheet <b>9</b> of <b>23</b>
LOCATION: <b>Burlington, VT ANGB</b>	Crew Chief <b>J. Olsen</b>
	Unit No. <b>#2</b>
	Job No.

Probe Location I.D.	15643-10	15644-10	15645-10	15652-10	15658-10	15649-10
Date:	8/18/94	8/18/94	8/19/94	8/19/94	8/19/94	8/19/94
Time:	4:00	4:24	8:15	10:20	10:45	11:00
Sample Number:	#49	#50	#51	#52	#53	#54
Depth	10ft	10ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	10-20 sec purge time <FIELD DUP>	10-20 sec purge time <FIELD DUP>	10-20 purge time <FIELD DUP>	10-20 sec purge time	"DITTO"

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	N/A	On-site lab analysis	Shipped via: <b>ATA</b>
	Time			Date Shipped: <b>N/A</b>
				Shipper's Signature: <b>JEO</b>

**Soil-Gas Sampling  
Field Log Sheet**

CLIENT: <b>TETC</b>		Sheet <b>10</b> of <b>23</b>	
LOCATION: <b>Burlington, VT ANGB</b>		Crew Chief <b>J. Olsen</b>	
		Unit No. <b>#2</b>	
		Job No. _____	

Probe Location I.D.	15648-10	15647-10	15646-10	15651-10	15653-10	15655-10
Date:	8/19/94	8/19/94	8/19/94	8/19/94	8/19/94	8/19/94
Time:	11:15	11:30	11:55	12:15	12:30	2:20
Sample Number:	#55	#56	#57	#58	#59	#60
Depth	10ft	10ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	Purge Time 10-20 sec	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time	N/A		
Samples Received By:	Date	N/A	On-site lab analysis	Hand Delivered: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
	Time	N/A		Shipped via: <b>N/A</b>
				Date Shipped: <b>N/A</b>
				Shipper's Signature: <b>JEO</b>

CLIENT: <b>TETC</b>	Sheet <u>11</u> of <u>23</u>
LOCATION: <b>Burlington, VT ANGB</b>	Crew Chief <u>J. Olsen</u>
	Unit No. <u>#2</u>
	Job No. _____

Probe Location I.D.	15654-10	15658-10	15659-10	15660-10	15656-10	15657-10
Date:	8/19/94	8/19/94	8/19/94	8/19/94	8/20/94	8/20/94
Time:	2:40	4:45	5:00	5:45	8:05	8:35
Sample Number:	#61	#62	#63	#64	#65	#66
Depth	10 ft	10 ft	10 ft	10 ft	10 ft	10 ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO" <FIELD DUP>	"DITTO"	"DITTO"	"DITTO"	

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	N/A	On-site lab analysis	Shipped via: <u>N/A</u>
	Time			Date Shipped: <u>N/A</u>
			Shipper's Signature: <u>JEO</u>	

CLIENT: <b>TETC</b>		Sheet <b>12</b> of <b>23</b>	
LOCATION: <b>Burlington, VT ANGB</b>		Crew Chief <b>J. Olsen</b>	
		Unit No. <b>#2</b>	
		Job No. _____	

Probe Location I.D.	15638-10	15661-10	4-561-5 <del>3-561-5</del>	4-561-10 <del>3-561-10</del>	4-561-15 <del>3-561-15</del>	3 4-562-10
Date:	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94
Time:	9:00	9:20	9:35	9:40	9:45	10:10
Sample Number:	#67	#68	#69	#70	#71	#73
Depth	10ft	10ft	<del>5ft 10ft</del>	10ft	15ft	10ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO" slight odor in tubing	"DITTO" slight odor in tubing

**CHAIN OF CUSTODY**

Samples Relinquished By:		Lab Comments: <b>Onsite lab analysis</b>	Sample Shipment:	
Date	N/A		Hand Delivered:	yes no
Time			Shipped via:	N/A
Samples Received By:			Date Shipped:	N/A
Date	N/A	Shipper's Signature:		
Time		<b>JEO</b>		

CLIENT: <b>TETC</b>	Sheet <b>13</b> of <b>23</b>
LOCATION: <b>Burlington, VT ANGB</b>	Crew Chief <b>J. Olsen</b>
	Unit No. <b>#2</b>
	Job No.

Probe Location I.D.	3563-10	3564-10	3565-10	3566-10	3567-10	3568-10
Date:	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94
Time:	11:40	11:55	12:15	12:25	12:45	1:45
Sample Number:	#75	#76	#77	#78	#79	#80
Depth	10 ft	10 ft	10 ft	10 ft	10 ft	10 ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	22	22	22	22	22	22
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
C O M M E N T S	10-20 sec. purge time slight odor in tubing strong	10-20 sec. purge time	10-20 sec. purge time	10-20 sec. purge time	10-20 sec. purge time strong odor present on rods upon retrieval	10-20 sec. purge time

**CHAIN OF CUSTODY**

Samples Relinquished By:		Lab Comments:	Sample Shipment:
Date <b>N/A</b>		<b>On-site lab analysis</b>	Hand Delivered <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Time <b>N/A</b>			Shipped via: <b>N/A</b>
Samples Received By:			Date Shipped: <b>N/A</b>
Date <b>N/A</b>			Shipper's Signature: <b>JEO</b>
Time <b>N/A</b>			



**Soil-Gas Sampling  
Field Log Sheet**

CLIENT: <b>TETC</b>		Sheet <b>14</b> of <b>23</b>	
LOCATION: <b>Burlington, VT ANGR</b>		Crew Chief <b>J. Olsen</b>	
		Unit No. <b>#2</b>	
		Job No.	

Probe Location I.D.	3569-10	35610-10	35611-10	35612-10	35613-10	35614-10
Date:	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94
Time:	2:00	2:15	2:30	2:45	3:00	3:10
Sample Number:	#81	#82	#83	#84	#85	#86
Depth	10ft	10ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	Lab Comments:	Sample Shipment:
	Time		
Samples Received By:	Date	Date Shipped:	Shipper's Signature:
	Time		

Date: **N/A**  
 Time: **N/A**  
 Lab Comments: **on-site lab analysis**  
 Sample Shipment: **Hand Delivered: yes no**  
 Shipped via: **N/A**  
 Date Shipped: **N/A**  
 Shipper's Signature: **JEO**



CLIENT: <u>TETC</u>				Sheet <u>15</u> of <u>23</u> Crew Chief <u>J. Olsen</u> Unit No. <u># 2</u> Job No. _____		
LOCATION: <u>Burlington, VT ANGB</u>						

Probe Location I.D.	35615-10	4-562-10	4-563-10	4-565-10	4-564-15	4-566-15
Date:	8/20/94	8/21/94	8/21/94	8/21/94	8/21/94	8/21/94
Time:	3:20	10:30	10:50	11:30	11:50	12:15
Sample Number:	#87	#90	#91	#92	#93	#94
Depth	10ft	10ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT  10-20 sec purge time  10-20 sec purge time  "DITTO"  "DITTO"  "DITTO"  "DITTO"						

**CHAIN OF CUSTODY**

Samples Relinquished By: Date <u>N/A</u> Time _____	Lab Comments: <u>On-site lab analysis</u>	Sample Shipment: Hand Delivered: <u>yes</u> no Shipped via: <u>N/A</u> Date Shipped: <u>N/A</u> Shipper's Signature: <u>JEO</u>
Samples Received By: Date <u>N/A</u> Time _____		

**Soil-Gas Sampling  
Field Log Sheet**

CLIENT: <b>TETC</b>		Sheet <b>16</b> of <b>23</b>	
LOCATION: <b>Burlington, VT ANGB</b>		Crew Chief <b>J. Olsen</b>	
		Unit No. <b>#2</b>	
		Job No. _____	

Probe Location I.D.	4-567-15	4568-15	4569-15	45610-15	45611-15	45612-15
Date:	8/21/94	8/21/94	8/21/94	8/21/94	8/21/94	8/21/94
Time:	12:35	12:50	1:05	3:50	4:10	4:25
Sample Number:	#95	#96	#97	#98	#99	#100
Depth	15ft	15ft	15ft	15ft	15ft	15ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	N/A	On-site lab analysis	Hand Delivered: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
	Time			Shipped via: <b>N/A</b>
				Date Shipped: <b>N/A</b>
				Shipper's Signature: <b>JEO</b>

# ENVIROSURV

INC.

2800-C Dorr Avenue  
Fairfax, Virginia 22031

## Soil-Gas Sampling Field Log Sheet

CLIENT: <b>TETC</b>	Sheet <b>17</b> of <b>23</b>
LOCATION: <b>Burlington, VT ANGB</b>	Crew Chief <b>J. Olsen</b>
	Unit No. <b>#2</b>
	Job No.

Probe Location I.D.	45G13-15	45G14-15	45G15-10	45G16-10	45G17-10	45G18-10
Date:	8/21/94	8/21/94	8/22/94	8/22/94	8/22/94	8/22/94
Time:	4:40	5:30	7:55	8:15	8:30	8:50
Sample Number:	#103	#105	#107	#108	#109	#110
Depth	15ft	15ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO"	<FIELD DUP> "DITTO"	"DITTO"

### CHAIN OF CUSTODY

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	N/A	On-site lab analysis	Hand Delivered: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Time			Shipped via: <b>N/A</b>
				Date Shipped: <b>N/A</b>
				Shipper's Signature: <b>JEO</b>

CLIENT: <u>TETC</u>				Sheet <u>18</u> of <u>23</u>		
LOCATION: <u>Burlington, VT ANGB</u>				Crew Chief <u>J. Olsen</u>		
				Unit No. <u>#2</u>		
				Job No. _____		
Probe Location I.D.	<u>45G19-10</u>	<u>45G20-10</u>	<u>45G21-10</u>	<u>45G22-10</u>	<u>45G22-10</u>	<u>45G22-15</u>
Date:	<u>8/22/94</u>	<u>8/22/94</u>	<u>8/22/94</u>	<u>8/22/94</u>	<u>8/22/94</u>	<u>8/22/94</u>
Time:	<u>9:15</u>	<u>9:30</u>	<u>10:00</u>	<u>10:10</u>	<u>10:30</u>	<u>10:45</u>
Sample Number:	<u>#111</u>	<u>#112</u>	<u>#113</u>	<u>#114</u>	<u>#115</u>	<u>#116</u>
Depth	<u>10-ft</u>	<u>10ft</u>	<u>10ft</u>	<u>5ft</u>	<u>10ft</u>	<u>15ft</u>
Purge Vacuum (in./Hg-H2O)	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>
Purge Volume (L.)	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>
Sample Vacuum (in./H2O)	<u>9</u>	<u>9</u>	<u>9</u>	<u>9</u>	<u>9</u>	<u>9</u>
Sample Volume	<u>125ml</u>	<u>250ml</u>	<u>250ml</u>	<u>250ml</u>	<u>250ml</u>	<u>250ml</u>
Sample Taken By:	<u>J. Olsen</u>	<u>J. Olsen</u>	<u>J. Olsen</u>	<u>J. Olsen</u>	<u>J. Olsen</u>	<u>J. Olsen</u>
COMMENT	<u>10-20 sec purge time</u>	<u>"DITTO"</u>	<u>"DITTO"</u>	<u>"DITTO"</u>	<u>"DITTO"</u>	<u>"DITTO"</u>

**CHAIN OF CUSTODY**

Samples Relinquished By:		Lab Comments: <u>On-site lab analysis</u>	Sample Shipment:
Date <u>N/A</u>			Hand Delivered: <u>yes</u> <u>no</u>
Time _____			Shipped via: <u>N/A</u>
Samples Received By:			Date Shipped: <u>N/A</u>
Date <u>N/A</u>			Shipper's Signature:
Time _____			<u>JEO</u>

CLIENT: <u>TETC</u>				Sheet <u>19</u> of <u>23</u>	
LOCATION: <u>Burlington, VT ANGB</u>				Crew Chief <u>J. Olsen</u>	
				Unit No. <u>#2</u>	
				Job No. _____	

Probe Location I.D.	45G23-15	45G24-15	45G25-15	45G26-15	45G27-10	45G16-15
Date:	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94
Time:	11:05	11:25	11:50	12:10	2:00	2:25
Sample Number:	#117	#118	#119	#120	#121	#122
Depth	15ft	15ft	15ft	15ft	10ft	15ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	10-20 sec purge time. Initial probe to 15ft, pulled water into tubing, Retracted probe an additional 1ft for a 15-13ft interval and sampled.	10-20 sec purge time	10-20 sec purge time

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	<u>N/A</u>	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	<u>N/A</u>	On-site lab analysis	Shipped via: <u>N/A</u>
	Time			Date Shipped: <u>8/22</u>
			Shipper's Signature: <u>JEO</u>	

**Soil-Gas Sampling  
Field Log Sheet**

CLIENT: <b>TETC</b>				Sheet <b>20</b> of <b>23</b> Crew Chief <b>J. Olsen</b> Unit No. <b>#2</b> Job No. _____		
LOCATION: <b>Burlington, VT ANGB</b>						

Probe Location I.D.	45G7-15	35G16-10	35G17-10	35G18-9	35G19-10	35G20-9
Date:	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94
Time:	2:40	3:40	3:55	4:20	4:35	4:52
Sample Number:	#123	#124	#125	#126	#127	#128
Depth	15ft	10ft	10ft	9ft	10ft	9ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen

<b>C O M M E N T</b>	10-20 sec purge time	10-20 sec purge time	10-20 sec purge time	10-20 sec purge time Water at 9ft	10-20 sec purge time	10-20 sec purge time
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**CHAIN OF CUSTODY**

Samples Relinquished By: _____ Date <b>N/A</b> Time _____	Lab Comments: <b>On-site lab analysis</b>	Sample Shipment: Hand Delivered: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Shipped via: <b>N/A</b> Date Shipped: <b>N/A</b> Shipper's Signature: <b>JEO</b>
Samples Received By: _____ Date <b>N/A</b> Time _____		

CLIENT: <b>TETC</b>	Sheet <b>21</b> of <b>23</b>
LOCATION: <b>Burlington, UT ANGB</b>	Crew Chief <b>J. Olsen</b>
	Unit No. <b>#2</b>
	Job No.

Probe Location I.D.	45628-15	45628-20	45629-20	1-5662-5	1-5663-5	1-5664-15
Date:	8/23/94	8/23/94	8/23/94	8/23/94	8/23/94	8/23/94
Time:	8:05	10:10	10:35	10:55	11:30	12:05
Sample Number:	#130	#132	#133	#134	#135	#136
Depth	15ft	20ft	20ft	5ft	5ft	15ft
Purge Vacuum (in./Hg-H2O)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	10-20 sec purge time ground water at 5.5ft.	30-45 sec purge time some water in tubing	10-20 sec purge time 2 Field Duplicates

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	N/A	On-Site lab analysis	Hand Delivered: yes/no
	Time			Shipped via: N/A
				Date Shipped: N/A
				Shipper's Signature: JEO



CLIENT: <b>TETC</b>		Sheet <b>22</b> of <b>23</b>	
LOCATION: <b>Burlington, VT ANGB</b>		Crew Chief <b>J. Olsen</b>	
		Unit No. <b>#2</b>	
		Job No.	

Probe Location I.D.	15G65-10	15G66-10	15G67-10	45G20-5	45G31-5	45G32-5
Date:	8/23/94	8/23/94	8/23/94	8/23/94	8/23/94	8/23/94
Time:	12:30	1:41	1:55	2:15	2:25	2:35
Sample Number:	#137	#138	#139	#140	#141	#142
Depth	<del>10ft</del> 4ft	10ft	10ft	5ft	5ft	5ft
Purge Vacuum (in./Hg-H2O)	15	15	15	20	20	20
Purge Volume (L.)	2L	2L	2L	4L	4L	4L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
C O M M E N T	10-20 sec purge time Water just below 12ft	10-20 sec purge time	10-20 sec purge time	10-20 sec purge time sampling rod hand driven Extended tubing used, approx 60 ft.	"Ditto"	"Ditto"

**CHAIN OF CUSTODY**

Samples Relinquished By:	Date	N/A	Lab Comments:	Sample Shipment:
	Time			
Samples Received By:	Date	N/A	On-site lab analysis	Hand Delivered: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
	Time			Shipped via: N/A
				Date Shipped: N/A
				Shipper's Signature: JEO



**Soil-Gas Sampling  
Field Log Sheet**

CLIENT: <u>TETC</u>	Sheet <u>23</u> of <u>23</u>
LOCATION: <u>Burlington, VT ANGB</u>	Crew Chief <u>J. Olsen</u>
	Unit No. <u>#2</u>
	Job No. <u></u>

Probe Location I.D.	<u>45G334</u>
Date:	<u>8/23/94</u>
Time:	<u>2:50</u>
Sample Number:	<u>#143</u>
Depth	<u>4ft</u>
Purge Vacuum (in./Hg-H2O)	<u>20</u>
Purge Volume (L.)	<u>46</u>
Sample Vacuum (in./H2O)	<u>9</u>
Sample Volume	<u>250ml</u>
Sample Taken By:	<u>J. Olsen</u>

C  
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T

30-45 sec purge time, sampling rod hand driven, extended tubing used; approx 60 ft.

**CHAIN OF CUSTODY**

Samples Relinquished By:	Lab Comments:	Sample Shipment:
Date <u>N/A</u>	<u>On-site lab analysis</u>	Hand Delivered: <u>yes</u> / no
Time <u>N/A</u>		Shipped via: <u>N/A</u>
Samples Received By:		Date Shipped: <u>N/A</u>
Date <u>N/A</u>		Shipper's Signature: <u>JEO</u>
Time <u>N/A</u>		



# Groundwater Sampling Field Log Sheet

CLIENT: <b>TETC</b>		Sheet <u>1</u> of <u>4</u>	
LOCATION: <b>Burlington, VT ANGB</b>		Crew Chief <u>J. Olsen</u>	
		Unit No. <u>#2</u>	
		Job No. _____	

Date	8/16/94	8/20/94	8/20/94	8/21/94	8/21/94	8/21/94
Well-Point Location I.D.	3G-W1-16	4G-W1-21	3G-W2-19	3G-W3-19	3G-W4-19	4G-W2-30
Well-Point Information:	colocated	colocated	colocated	colocated	colocated	colocated
Length of Probe Rod (ft.)	18ft	21ft	19ft	19ft	19ft	26ft
Total Depth * (ft.)	18ft	21ft	19ft	19ft	19ft	26ft
Depth to Water * (ft.)	16.5ft	18.5ft	16.5ft	17ft	16.5ft	23ft
Volume in Well point (l.)						
Sampling Information:	product			product	product	
Turbidity Before Purging	Low	Mod	Mod	Low	Low	Mod
Volume Purged	—	—	—	—	—	—
Turbidity After Purging	—	—	—	—	—	—
Purged Dry? (Y/N)	N	N	N	Y	N	N
Purging Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Sampling Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Time of Sampling	12:20	10:30	11:30	9:20	9:45	2:15
Samples Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
Sample Information:						
Sample No.	#3	#72	#74	#88	#89	#98
Number - Volume (mls.)	40ml	80ml	40ml	20ml	40ml	40ml
Type of Container (G/P)	G	G	G	G	G	G
Field Filtered (Y/N)	N	N	N	N	N	N
ESI Field Duplicate (Y/N)	N	Y	N	N	N	N

\* Measured from surface of ground

## CHAIN OF CUSTODY

Samples Relinquished By:	Date	Lab Comments:	Sample Shipment:
	Time		
Samples Received By:	Date	On-site lab analysis	Hand Delivered: <u>yes</u> no
	Time		
			Shipped via: <u>NA</u>
			Date Shipped: <u>N/A</u>
			Shipper's Signature: <u>JEO</u>



## Groundwater Sampling Field Log Sheet

CLIENT: <b>TETC</b>		Sheet <u>2</u> of <u>4</u>	
LOCATION: <b>Burlington, UT ANGB</b>		Crew Chief <u>J. Olsen</u>	
		Unit No. <u>#2</u>	
		Job No. _____	

Date	8/21/94	8/21/94	8/21/94	8/22/94	8/23/94	8/23/94
Well-Point Location I.D.	<u>4GW3-30</u>	<u>4GW4-21</u>	<u>4GW5-24</u>	<u>3GW5-22</u>	<u>4GW6-24</u>	<u>3GW6-21</u>
<b>Well-Point Information:</b>						
Length of Probe Rod (ft.)	<u>30ft</u>	<u>21ft</u>	<u>24ft</u>	<u>22ft</u>	<u>24ft</u>	<u>21ft</u>
Total Depth * (ft.)	<u>26ft</u>	<u>20ft</u>	<u>24ft</u>	<u>22ft</u>	<u>24ft</u>	<u>21ft</u>
Depth to Water * (ft.)	<u>24ft</u>	<u>19ft</u>	<u>20ft</u>	<u>20ft</u>	<u>20ft</u>	<u>18.5ft</u>
Volume in Well point (l.)						
<b>Sampling Information:</b>						
Turbidity Before Purging	<u>Mod</u>	<u>Mod</u>	<u>Mod</u>	<u>Mod</u>	<u>Low</u>	<u>Mod</u>
Volume Purged	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Turbidity After Purging	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Purged Dry? (Y/N)	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>
Purging Method	<u>F.V.</u>	<u>F.V.</u>	<u>F.V.</u>	<u>F.V.</u>	<u>F.V.</u>	<u>F.V.</u>
Sampling Method	<u>F.V.</u>	<u>F.V.</u>	<u>F.V.</u>	<u>F.V.</u>	<u>F.V.</u>	<u>F.V.</u>
Time of Sampling	<u>3:00</u>	<u>5:15</u>	<u>5:50</u>	<u>5:20</u>	<u>9:30</u>	<u>3:30</u>
Samples Taken By:	<u>J. Olsen</u>	<u>J. Olsen</u>	<u>J. Olsen</u>	<u>J. Olsen</u>	<u>J. Olsen</u>	<u>J. Olsen</u>
<b>Sample Information:</b>						
Sample No.	<u>#99</u>	<u>#104</u>	<u>#106</u>	<u>#129</u>	<u>#131</u>	<u>#144</u>
Number - Volume (mls.)	<u>40ml</u>	<u>40ml</u>	<u>80ml</u>	<u>40ml</u>	<u>40ml</u>	<u>40ml</u>
Type of Container (G/P)	<u>G</u>	<u>G</u>	<u>G</u>	<u>G</u>	<u>G</u>	<u>G</u>
Field Filtered (Y/N)	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>
ESI Field Duplicate (Y/N)	<u>N</u>	<u>N</u>	<u>Y</u>	<u>N</u>	<u>N</u>	<u>N</u>

\* Measured from surface of ground

### CHAIN OF CUSTODY

<b>Samples Relinquished By:</b> Date <u>N/A</u> Time _____	<b>Lab Comments:</b> <u>On-site lab analysis</u>	<b>Sample Shipment:</b> Hand Delivered: <u>yes</u> / no Shipped via: <u>N/A</u> Date Shipped: <u>N/A</u> Shipper's Signature: <u>JEO</u>
<b>Samples Received By:</b> Date <u>N/A</u> Time _____		



## Groundwater Sampling Field Log Sheet

<b>CLIENT:</b> TETC <b>LOCATION:</b> Burlington, VT ANGB	Sheet <u>3</u> of <u>4</u> Crew Chief <u>J. Olsen</u> Unit No. <u>#2</u> Job No. _____
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Date	8/23/94	8/24/94	8/25/94	8/26/94	8/27/94	8/28/94
Well-Point Location I.D.	3GW7-24	4GW7-24	4GW8-21	3GW8-24	4GW9-21	4GW10-21
<b>Well-Point Information:</b>						
Length of Probe Rod (ft.)	24ft	24ft	21ft	24ft	21ft	21ft
Total Depth * (ft.)	24ft	24ft	21ft	24ft	21ft	21ft
Depth to Water * (ft.)	22ft	19.5ft	19.5ft	23ft	19ft	19ft
Volume in Well point (l.)						
<b>Sampling Information:</b>						
Turbidity Before Purging	High	Mod	Mod	Mod	Mod	Mod
Volume Purged	—	—	—	—	—	—
Turbidity After Purging	—	—	—	—	—	—
Purged Dry? (Y/N)	N	N	N	N	N	N
Purging Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Sampling Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Time of Sampling	4:05	8:45	9:10	9:40	10:10	10:40
Samples Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
<b>Sample Information:</b>						
Sample No.	#145	#146	#147	#148	#149	#150
Number - Volume (mls.)	40ml	40ml	40ml	40ml	40ml	40ml
Type of Container (G/P)	G	G	G	G	G	G
Field Filtered (Y/N)	N	N	N	N	N	N
ESI Field Duplicate (Y/N)	N	N	N	N	N	N

\* Measured from surface of ground

### CHAIN OF CUSTODY

<b>Samples Relinquished By:</b> Date <u>N/A</u> Time _____	<b>Lab Comments:</b> <u>on-site lab analysis</u>	<b>Sample Shipment:</b> Hand Delivered: <u>yes</u> no Shipped via: <u>N/A</u> Date Shipped: <u>N/A</u> Shipper's Signature: <u>JEO</u>
<b>Samples Received By:</b> Date <u>N/A</u> Time _____		



**Groundwater Sampling  
Field Log Sheet**

CLIENT: <u>ETC</u>		Sheet <u>4</u> of <u>4</u>	
LOCATION: <u>Burlington, VT ANGB</u>		Crew Chief <u>J. Olsen</u>	
		Unit No. <u>#2</u>	
		Job No. _____	
Date	<u>8/24/94</u>	<u>8/24/94</u>	<u>8/24/94</u>
Well-Point Location I.D.	<u>4P2-1</u>	<u>4P2-2</u>	<u>4P2-3</u>
Well-Point Information:	<u>colocated</u> <u>4565-</u>	<u>colocated</u> <u>45615</u>	<u>colocated</u> <u>4568</u>
Length of Probe Rod (ft.)	<u>26 ft</u>	<u>24 ft</u>	<u>22 ft</u>
Total Depth * (ft.)	<u>24.2 ft</u>	<u>18.8</u>	<u>19.2</u>
Depth to Water * (ft.)			
Volume in Well point (l.)			
<b>Sampling Information:</b>			
Turbidity Before Purging			
Volume Purged			
Turbidity After Purging			
Purged Dry? (Y/N)			
Purging Method			
Sampling Method			
Time of Sampling	<u>10:45</u>	<u>11:00</u>	<u>11:15</u>
Samples Taken By:	<u>J. Olsen</u>	<u>J. Olsen</u>	<u>J. Olsen</u>
<b>Sample Information:</b>			
Sample No.	<u>#151</u>	<u>#152</u>	<u>#153</u>
Number - Volume (mls.)			
Type of Container (G/P)			
Field Filtered (Y/N)			
ESI Field Duplicate (Y/N)			

\* Measured from surface of ground

**CHAIN OF CUSTODY**

Samples Relinquished By:		Lab Comments: <u>On-site lab analysis</u>	Sample Shipment: Hand Delivered: <u>yes</u> no Shipped via: <u>N/A</u> Date Shipped: <u>N/A</u> Shipper's Signature: <u>TEO</u>
Date	<u>N/A</u>		
Time			
Samples Received By:			
Date	<u>N/A</u>		
Time			

## APPENDIX C: FIELD LOGS

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BORING LOG	BORING/WELL NO.: V3-BG1-	Page 1 of 2
Installation: VTANG		Site: 3 Dry Snap Background
Project No.: 931802-08 Client/Project: HAZWRAP/ANG		
HAZWRAP Contractor: Earth Tech	Drill Contractor: Parrot Wolff Inc	Driller: Joseph Perry
Drill Started: 9/20/94 (7:25 A.M.)		Drill Ended: 9/20/94 (2:55 P.M.)
Borehole dia (st): 8"		
Drill Method/Rig Type: HSA's (4.25" ID.) / CME-75		
Logged by: Patricia H. Lay		E-Log (Y (N)) From _____ to _____
Protection Level: D		

Depth (ft)	Sample	Sample Lab	No. Analyzed (Y/N)	Spoon Recovered	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0					0- Grass							
0-3'					Silt and sand (mof.) with <del>clay</del> <sup>phy. root hairs</sup> 2.5 yd 1/4 light yellow brown dry to sl. moist no odor	SM	5		2 sleeves			
3-5'					Silty sand (f to v. f) with trace c. sand and f. gravel dry to sl. moist no odor 2.5 yd 1/4 Lt. olive brown.	ML	4		3-5' Spoon			0730
8-9'					as above	SM	6		2 sleeves			
9-10'					V. fine sand and silt sl. moist to dry no odor 2.5 yd 1/4 Lt. yellowish brown.	ML	2		8-10' Spoon			0740
13-15'					as above no odor	SM	12		2 sleeves			
13-15'					as above no odor	ML	2		13-15' Spoon			0800
18-18.5'					V. f. sand and silt dry to sl. moist 2.5 yd 1/4 light yllw brown no odor	SM	4		3 sleeves			
18.5 to 20'					f to v. f. sand w/ trace silt sl. moist to dry 2.5 yd 1/3 light yellowish brown	ML	4		18-20' Spoon			0810
23 to 25'					same as no odor	SM	2		2 sleeves			
23 to 25'					same as no odor	ML	3		23-25' Spoon			0820
28-30'					V. f. sand and silt sl. moist no odor 2.5 yd 1/3 light yellowish brown.	SM	3		3 sleeves			
28-30'					same as no odor	ML	5		28-30' Spoon			0830
33-35'					as above sl. moist no odor	SM	5		2 sleeves			
33-35'					as above sl. moist no odor	ML	11		33-35' Spoon			0840

U = Thin Wall Tube  
S = Split spoon (tube)  
C = Cuttings

R = Rock Coring

O = Other

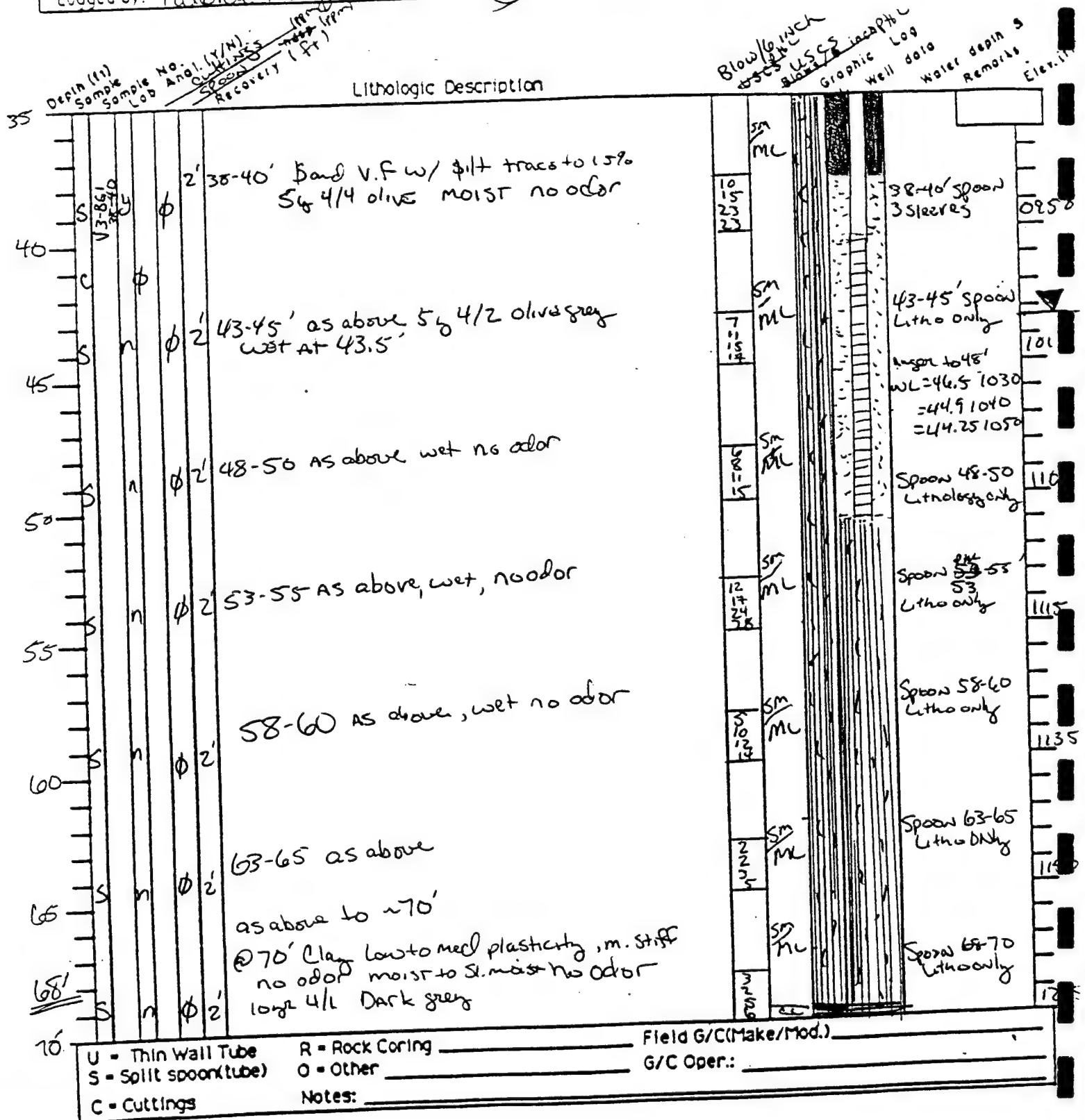
Notes:

Field G/C (Make/Mod.)

G/C Oper.:



BORING LOG	BORING/WELL NO.: V3-861	Page 2 of 2
Installation: VTANG	Site: 3 Dry Sump - Background	
Project No. 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drill Contractor: Parrat Wolff	Driller: Joseph Perry
Drill Started: 9/20/94 (7:25 A.M.)	Drill Ended: 9/20/94 (2:55 P.M.)	Borehole dia(s): 8"
Drill Method/Rig Type: HSA's (4.25" ID) / CMS-75		
Logged by: Patrick H. Lang	E-Log (Y/N): (N)	From _____ to _____
		Protection Level: D





BORING LOG	BORING/WELL NO.: V3 - \$B-1	Page 1 of 1
Installation: VTANG-	Site: SI SITE 3 \$B-1	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EarthTech	Drill Contractor: Barrett Wolff	Driller: R. Navatka
Drill Started: 9/13/94 (10:24 AM)	Drill Ended: 9/13/94 (11:40 AM)	Borehole dia(s): 8-inch
Drill Method/Rig Type: HSA <sub>5</sub> (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From _____ to _____	Protection Level: D

\* Grass At Surface

## Lithologic Description

USCS Blows/6 inch. Log  
Graphic Well data  
Water depth 9  
Remarks  
Elev. ft

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	Recovery (ft)	Lithologic Description	USCS	Blows/6 inch.	Graphic	Well data	Water depth 9	Remarks	Elev. ft
0-3'			N/A		Silty Sand, Grayish Brown (SYR 3/2), fine grained, moist - sli. moist. (abundant fine mica)	\$M						
3-4.7'			75/18		Silty Sand, AS Above 2 w/ Mod. Yel. Brn. (10YR 5/4), HC ODOR	\$M	10/3				* Strong HC odor	*1032 2sleeves
4.7-5'					Sand, LT. olive Gray (SYR 6/1), fine-coarse grn., loose, moist, HC odor	\$W						
3-8'			N/A		Silty Sand/Sandy Silt, LT. olive Gray (SYR 6/1), very fine to fine grained, slightly moist, HC ODOR	\$M/ML					w/ HC vapors / odor in BZ.	*1117 2sleeves
8-10'			213/22		Silty Sand/Sandy Silt - AS Above, Sli. moist., HC ODOR	\$M/ML	3/8					
8-11'			N/A		AS Above, HC ODOR	\$M						
11-13'			149/218/224		Silty Sand/Sandy Silt, AS above, slightly moist to moist, HC ODOR	\$M/ML	5/9/10/11				↓ Dup	*1121 3sleeves
11-15'			N/A		AS Above, HC ODOR	\$M/ML						
Sampling TD 13' bgs. Drilling TD 15' bgs.					* Anticipated water btw. 13-15'. Hydrocarbon (HC) vapors so strong opted not to drill further 2-3 feet to minimize vapors and limit volume of contaminated cuttings. Gm 9/14/94							est. water btw 15-17 ft bgs, sov wtr level ~ 17' in vicinity. Spm was wet on end of spm to top, 13.2-15' bgs on \$B-5. Gm 9/13/94.

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.)
\$ = Split spoon (tube)	O = Other	G/C Oper.:
C = Cuttings	Notes:	

BORING LOG	BORING/WELL NO.: V3- <del>SB</del> -2	Page 1 of 1
Installation: VTANG-	Site: SI Site 3, <del>SB</del> -2	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drill Contractor: Parrott Wolf	Driller: Rick Navatka
Drill Started: 9/13/94 9:11 A.M.	Drill Ended: 9/13/94 (9:39 A.M.)	Borehole dia(s): 8-inch
Orig Method/Rtg Type: HSA <sub>5</sub> (4.25" ID) / CME-TS		
Logged by: G. Mayner	E-Log (Y/N) From to	Protection Level: D

\* Grass AT surface

Depth (ft)	Sample No.	Sample Lab	No. Anal. (Y/N)	Recovery (%)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0					0-3' Silty Sand, Grayish Brown (5YR 3/2), fine grained, moist to sli. moist.	\$M						
5					3-5' Silty Sand, AS Above, w/ Mod. yel. brn. (10YR 5/4) and LT. olive Gray (5Y 4/2) at 4-5', moist.	\$M	6					
					3-8' AS Above, w/ Hydrocarbon odor at ~ 7.5-8'.	\$M					HC odor	
10					8-10' Sandy silt/silty sand, LT. olive Gray, v. fine grained, slightly moist, HC odor	\$M	5					
					8-11' AS Above,	\$M	7					
					11-13' Sandy silt/silty sand, AS Above, sli. moist, HC odor.	\$M	8					
15					DRILLING TD 11' bgs. Sample TD 13' bgs.							
					* Strong HC vapors in BZ; intermittently during drilling. Gm 9/13/94.							
											est. wtr. 14-16' Based on wet spoon in V3-SB-5. * Sov survey water level 17' bgs in vicinity. Gm 9/13/94	

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.)
S = Split spoon (tube)	O = Other	G/C Oper.:
C = Cuttings	Notes:	

BORING LOG	BORING/WELL NO.: V3-JB-3	Page 1 of 1
Installation: VTANG	Site: SI Site 3, JB-3	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EarthTech	Drill Contractor: Parrott Wolff	Driller: Rick Navatka
Drill Started: 9/13/94 (13:09 PM)	Drill Ended: 9/13/94 (13:37 PM)	Borehole dia(s): 8-inch
Drill Method/Rig Type: HSA's (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y (N)) From _____ to _____	Protection Level: D

\* Grass at surface

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	Recovery (ft)	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. ft.
0					0 - 3' Silty Sand, Brownish Gray (SY 4/1), to Grayish Brn (SYR 3/2), fine grained, peaty loam ~ 0-1 ft.	\$M						
3	166	234	1.6		3-5' S. Sand, AS Above w/ Hydrocarbon (HC) odor.	\$M	100				HC odor	1315
5					3-8' Silty Sand, AS Above to ~ 5', w/ Sandy Silt/Silty Sand, LT. olive Gray (SY 6/1), v. fine grn., sli. moist, HC odor.	\$M/ML						
8	165	198	1.9		8-10' Silty Sand/Sandy Silt, LT. olive Gray, v. fine grained, sli. moist, HC odor (strong).	\$M/ML	67					1325
10					8-13' AS Above, strong HC odor, slightly moist.	\$M/ML						1327
13	191	211	1.8		13-15' Silty Sand/Sandy Silt, AS Above ~ 13-14.5', w/ increase in fine grained sand ~ 14.5-15', strong HC odor, slightly moist.	\$M/ML	38					1337
15					Drilling TD 13' bgs. Sampling TD 15' bgs.						est. ~ 17' bgs.	

U = Thin Wall Tube  
 S = Split spoon (tube)  
 C = Cuttings

R = Rock Coring  
 O = Other  
 Notes: \_\_\_\_\_

Field G/C (Make/Mod.) \_\_\_\_\_

G/C Oper.: \_\_\_\_\_

BORING LOG	BORING/WELL NO.: V3-\$B-4	Page 1 of 1
Installation: VTANG	Site: SI Site 3, \$B-4	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drill Contractor: Parratt Wolff	Driller: Rick Navatka
Drill Started: 9/13/94 (14:50 P.M.)	Drill Ended: 9/13/94 (15:44 P.M.)	Borehole dia (in): 8-inch
Drill Method/Rig Type: HSA5 (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From _____ to _____	Protection Level: D

\* GRASS AT SURFACE

Depth (ft)	Sample No.	Lab Anal. (Y/N)	Recovery (%)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0-3'				Silty Sand, Grayish Brn (5YR 7/2) to Mod. Yel. Brn. (10YR 5/4), Fine grained, sli. moist to moist, Y. strong HC odor - 1 to 2 ft, HC? DK (W3)	\$M					HC odors	
3-5'				Silty Sand, Olive Brown (2.5Y 4/3), Fine grn., moist, HC DK Gray stain ~ 3.5'	\$M					Strong odors	
3-8'				3-7' AS Above, Silty sd, olive brn.	\$M						
7-8'				Silty Sand/Sandy Silt, L. olive Gray (5Y 4/1), v. Fin. grn., sli. moist to moist, HC odor - strong.	ML						
8-10'				Silty Sand/Sandy Silt, L. olive Gray, v. Fin. grn., sli. moist to moist, strong HC odor.	\$M						
8-13'				Silt/Sand, AS Above - Strong HC odors	\$M						
13-15'				Silt/Sand, AS Above, L. olive. Gray, strong HC odors.	\$M						
				* cuttings 13-15' 253 ppm ±. Drilling/Sampling TD 15' bgs.						Wtr est ~ 17' bgs.	

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.)
\$ = Split spoon (tube)	O = Other	G/C Oper.:
C = Cuttings	Notes:	

BORING LOG	BORING/WELL NO.: V3 - \$B-S	Page 1 of 1
Installation: VTANG		Site: SI Site 2, \$B-S
Project No.: 931802-08 Client/Project: HAZWRAP/ANG		
HAZWRAP Contractor: Earth Tech	Drill Contractor: Parrott Wolff	Driller: Rick Navatka
Drill Started: 9/13/94 (7:58 AM)		Drill Ended: 9/13/94 (8:33 AM)
Drill Method/Rig Type: HSA-5 (4.25" ID) / CME-75		Borehole dia(s): 8-inch
Logged by: G. Maynor		E-Log (Y/N) From _____ to _____
Protection Level: D		

\* Gross At Surface

## Lithologic Description

Depth (ft)	Sample No.	Lab Anal. (Y/N)	Recovery (ft)	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0-3'	185	N	100%	Silty Sand, Olive Gray (SY 4/1), fine grained, w/ peaty loam ~ 0-1 ft, moist, Hydrocarbon odor at ~ 2'?	\$M					H.C. odor	
3-5'	185	2	100%	Silty Sand, Olive Gray to Brn. Gray (SY 4/1), fine grn., moist, H.C. odor	\$M	6				VT. sleeves	807
5-8'	196	N	100%	Sandy Silt / Silty Sand, AS Above, w/ increase in silt ~ 5-8' & v. fine grn. sd.	\$M / ML						
8-9.8'	284	N	100%	Silt/Sand, Lt. olive Gray (SY 4/1), v. fine grained, moist, H.C. odor	\$M / ML	5					819
8-13'	305	N	100%	Silt/Sand, AS Above, moist, H.C. odor.	\$M / ML	7					2 sleeve
13-14.5(?)	199	N	100%	Silt/Sand, AS Above, wet(?) on spm ~ 13.2' ?? H.C. odor	\$M / ML	3				wet/v. moist spm ~ 13.2 ft.	833
				* Drilling TD 13' bgs. Sampling TD 15' bgs.						wtr ? ~ 17' based on SOV data. Gm 9/13/94	2 sleeve

U = Thin Wall Tube  
 S = Split spoon (tube)  
 C = Cuttings

R = Rock Coring  
 O = Other  
 Notes: \_\_\_\_\_

Field G/C (Make/Mod.) \_\_\_\_\_

G/C Oper.: \_\_\_\_\_

BORING LOG	BORING/WELL NO.: V3-MW-1	Page 1 of 1
Installation: VTANG		Site: SI Site 3, MW-1
Project No.: 931802-08		Client/Project: HAZWRAP
HAZWRAP Contractor: Earth Tech	Drill Contractor: Penrott Wolff	Driller: Rick Navatka
Drill Started: 9/13/94 (16:14 P.M.)		Drill Ended: 9/13/94 (16:47 P.M.)
Borehole dia (st): 8-inch		
Drill Method/Rig Type: HSA5 (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N): Y	Protection Level: D

\* Gravel/soil At surface

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	Recovery (ft)	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0					0-5' Silty Sand, Mod. Yel. Brn. (10YR 5/4), very fine grn, tr. moisture. Gravel fine to coarse from 0-1 ft road surface.	SM						
5					5-10' Silty Sand, AS above to Sandy Silt.	SM / ML					Finning Downward	
10					10-15' Silty Sand, AS above, w/ Olive Brown (2.5Y 4/3), v. fine grn, sli. moist, to Sandy Silt.	SM / ML						
15					15-18' Silty Sand, olive Brown, to Sandy Silt.	SM / ML						
20					18-19.7(?) Silt/Sand, olive Gray (5Y 4/1), v. fine grained, moist, wet -19' HC odor	SM / ML	24				Wtr ~19' bgs	
20					18-23' Silt/Sand, AS above.	SM / ML	45				HC odor	
25					23-24.8? Silty Sand/Sandy Silt, Brn. Gray (5YR 4/1), v. fine grn, wet	SM / ML	37					
25					23-26' TD. AS above							
Drilling TD 26' bgs. Sampling TD 25' bgs.												
* Split - spoon for Lithology only. For Detailed Lithology 0-15' see Borings for #B-1 thru #B-5. Gm 9/13/94.												

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.):
S = Split spoon (tube)	O = Other	G/C Oper.:
C = Cuttings	Notes:	

\* Added ~25 gallons potable wtr. during drilling.



V3-MW2

Fieldbook! 931802-08/10, B&A2 RP-106-107  
REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V3-MW-2	Page 1 of 1
Installation: VTANG		Site: SI Sites, MW-2
Project No.: 931802-08 Client/Project: HAZWRAP/ANG		
HAZWRAP Contractor: EarthTech	Drill Contractor: Perrett Wolfe	Driller: Rick Navatka
Drill Started: 9/14/94 (14:33 Z m)	Drill Ended: 9/14/94 (15:02 Z m)	Borehole dia(s): 8-inch
Drill Method/Rig Type: HSA3 (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From _____ to _____	Protection Level: D

\* Grass at surface

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	Recovery (ft)	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0-5	C/N/A				Silty Sand, Mod. Yel. Brn. (10YR 5/3); v. fine grained, w/ Lt. olive Brown (2.5 Y 5/4), loose, tr. moist.	\$M/ML						
5-10	C/N/A				AS Above, Silty Sand/Sandy Silt, v. fn. grn., olive Gray (5Y 4/1).	\$M/ML						
10-13	C/N/A				AS Above.	\$M/ML						
13-15	C/N/A				AS Above.	\$M/ML						
15-20	C/N/A				AS Above	\$M/ML						
20-25	C/N/A				AS Above; Silt/sand, olive Gray, v. fine grn.	\$M/ML						
25					* Drilling TD 25' bgs.							
					* Added ~ 10-15 gal wtr during drilling to keep sands down at Total Depth - Heaves into annulus.							

HC odor on cuttings

wtr ~ 18' bgs

U = Thin Wall Tube  
S = Split spoon (tube)R = Rock Coring  
O = Other

Field G/C (Make/Mod.)

G/C Oper.:

C = Cuttings

Notes:

V3-MW3

Fieldbook 931802-08/10 BK#2 PP 102-104  
REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V3-MW-73	Page 1 of 1
Installation: VTAN-G	Date: 9/14/94	Site: SI Site 3, MW-3
Project No.: 931802-08	Client/Project: HAZWRAP/ANCO	
HAZWRAP Contractor: Earth Tech	Drill Contractor: Penrett Wolff	Driller: Rick Navetta
Drill Started: 9/14/94 (10:50 A.M.)	Drill Ended: 9/14/94 (11:23 A.M.)	Borehole dia(s): 8-inch
Drill Method/Rig Type: HSA-5 (4.25" ID) / CME-75		
Logged by: G. Mayner	E-Log (Y/N) From to	Protection Level: D

\* Grass at surface.

Depth (ft)	Sample No.	Lab Anal. (Y/N)	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks
0									
0-4'			Silty Sand, Brown (10YR 5/3), v. fine grained, abundant v. fine mica, tr. moist.	\$M ML	2				9/14/94
4-6'			Silty Sand, AS Above to Mod Yel. Brown (10YR 5/4), incr. in fn. Sand 5-6'	\$M ML	2				9/14/94
4-9'			Silty Sand/Sandy Silt, Brown, AS Above.	\$M ML					
9-9.7'			Sand, Pale Yel. Brn. (10YR 6/2), fn to coarse grn.	\$W ML	3				
9.7-11'			Silty sand/sandy silt, Lt. olive Gray (5Y 4/1), sli. moist, w/ fine mica.	\$M ML	4				
9-14'			Silt/Sand, Olive Brown (2.5Y 3/3) to Lt. olive Gray (5Y 4/1), sli. moist, v. fine grn.	\$M ML					
14-16'			AS Above, moist, HC odor; olive Gray (5Y 4/1), v. fn. grn., soft, no plasticity.	\$M ML	4				HC odor ↓
14-19'			Silt/Sand, olive Gray, v. fine grn.	\$M ML					wtr 18.45' bgs 9/14/94
19-20.5' (?)			Silt/Sand, v. fine to fine grn, wet.	\$M ML	3				
19-21'			AS Above						
19-25' TD			AS Above.	\$M ML					
* Drilling TD 25' bgs.									
* Sample TD 21' bgs.									
* * Added 10-15 gal wtr during drilling									
⇒ Split-spooned for lithology only.									
TD 25'									

U = Thin Wall Tube  
 (S) = Split spoon (tube)  
 (C) = Cuttings

R = Rock Coring  
 O = Other  
 Notes:

Field G/C (Make/Mod.)

G/C Oper.:



BORING LOG	BORING/WELL NO.: V4-BG-1	Page 1 of 3
Installation: VTANG	Site: SI Site #4, background	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	Sum 9/10/94
HAZWRAP Contractor: Earth Tech	Drill Contractor: Perrotti Wolff	Driller: Ron Bush
Drill Started: 9/10/94 (8:35 A.M.)	Drill Ended: 9/10/94 (14:30 P.M.)	Borehole dia(s): 8-inch
Drill Method/Rig Type: HSA <sub>5</sub> (4.25" ID) / CME-75		
Logged by: G. Mayner	E-Log (Y (N)) From _____ to _____	Protection Level: D

\*Spudded boring 0-3'  
9/9/94 1045-1630

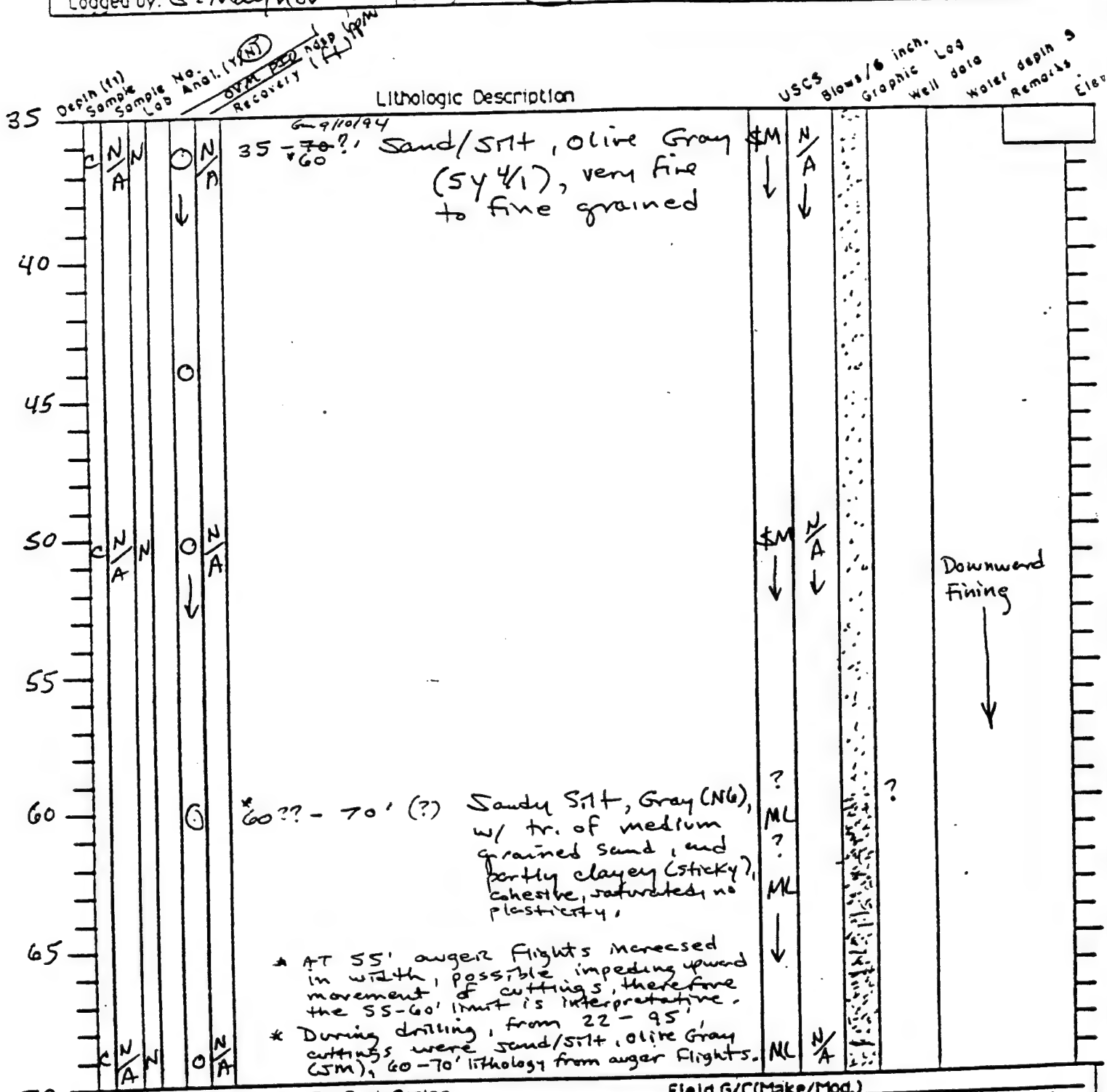
\*Asphalt at surface 0-0.7',  
old/weathered.

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	Recovery (ft)	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0-4'					Sandy silt/silty sand, Brown (10YR 5/3) to Mod. Yel. Brn (10YR 5/4), very fine to fine gr. to moisture, fill gravel gravel upper 2' mixed in.	SM ML						
4-6'					Sand/silt, AS above.	SM ML						
4-9'					Sand/silt, AS above, dom. Brown in color.	SM ML						
9-11'					Sand/silt, AS above	ML SM						
9-14'					Sand/silt AS above	SM ML						
14-16'					Sand/silt, AS above, w/ minor med. grn. sand and fine gravel at 14.5'	SM ML						
14-19'					Sand/silt	SM ML						
19-21'					Sand/silt, Sand dom. Fine grained, moist at 21'	SM ML						
19-22'					Sand/silt, AS above, moist to wet.	SM ML						
22-35'					Sand/silt, Olive Gray (5Y 4/1), wet.	SM ML						
<p>* Did not split - from 22-95' TD due to heaving sands - locking up on augers and entering auger ID tripping in/out w/ sample rods. Nearby V4-MW-3 was sampled to 51'.</p> <p>* Tagging local bedrock surface was the objective.</p>												

\* water - 22.55'  
1004 9/10/94

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.)
\$ = Split spoon (tube)	O = Other	G/C Oper.:
C = Cuttings	Notes:	

BORING LOG	BORING/WELL NO.: V4-BG-1	Page <u>2</u> of <u>3</u>
Installation: VTANG	Site: SI Site 4, Background	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	--
HAZWRAP Contractor: Earth Tech	Drill Contractor: Parrott Wolf	Driller: Ron Bush
Drill Started: 9/10/94 (8:35 AM)	Drill Ended: 9/10/94 (14:30 PM)	Borehole dia (st): 8 inch
Drill Method/Rig Type: HSA-5 (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From <u>    </u> to <u>    </u>	Protection Level: D



U = Thin Wall Tube  
S = Split spoon (tube)  
C = Cuttings

R = Rock Coring

O = Other

Notes:

Field G/C (Make/Mod.)

G/C Oper.:

\* Added 80 gallons of potable wtr during drilling.   
 6m 9/10/94

BORING LOG	BORING/WELL NO.: V4-BG-1	Page 3 of 3
Installation: VTANG		Site: SI Site 4, Background
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EarthTech	Drill Contractor: Parrott Wolf	Driller: Ron Bush
Drill Started: 9/10/94 (8:35 AM)	Drill Ended: 9/10/94 ( : : )	Borehole dia (s): 8-inch
Drill Method/Rig Type: HSA5 (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From : to :	Protection Level: D

Depth (ft)	Sample No.	Lab Anal.	Recovery (%)	Lithologic Description	USCS	Blows/6 inch.	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
70	C/N/A	N/A	O/N/A	70 - 95' (?) TD Clayey Silt, Gray (NG), saturated, cohesive, no plasticity, soft	ML						
75											
80				* Drillers noted <u>no</u> change in drill rate from intervals of sandy silt / clayey silt. No indication of competent agitated layer. No dry clays noted on lead auger. All sediments stuck between auger flights were completely saturated, and soft. Gm 9/10/94	ML						
85	C/N/A	N/A	O/N/A		ML						
90											
95	C/N/A	N/A	O/N/A	(Drill) TD 95' (No Bedrock) Drillers - out of augers, and possibly the limit of the equipment w/ ~73 ft of heaving fine grn sand/silt collapsing against augers. Gm 9/10/94	ML						

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.):
S = Split spoon (tube)	O = Other	G/C Oper.:
C = Cuttings	Notes:	

BORING LOG	BORING/WELL NO.: V4 - SB-1	Page 1 of 1
Installation VTANG		Site: SI Site 4, SB-1
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drill Contractor: Parrott Wolff	Driller: Ron Bush
Drill Started: 9/8/94 (11:20 A.M.)	Drill Ended: 9/8/94 (11:52 A.M.)	Borehole dia(s): 2-inch
Drill Method/Rig Type: HSA <sub>3</sub> (4.25" ID)/CME-75		
Logged by: G. Maynor	E-Log (Y/(N)) From _____ to _____	Protection Level: D

\* Grass At Surface

## Lithologic Description

USCS Blows/6 inch. Graphic Log Well data Water depth 9 Remarks Elev. 111

Depth (ft)	Sample No.	Lab No.	Anal. (Y/N)	Recovery (%)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth 9	Remarks	Elev. 111
0					0-4' Silty Sand/Sandy Silt. Brown (10 YR 5/3), v. fine to fine grained, slightly moist.	SM/ML						
5	1-8 34-36	N	0	2	4-6' AS Above w/ Mod. Yel. Brn. (10YR 5/4).	SM/ML	32					
					4-9' AS Above.	SM/ML						
10	1-8 34-36	Y	0	2	9-11' Silty Sand/Sandy Silt, AS Above	SM/ML	66					
					10-15' AS Above	SM/ML						
15					15-18 increase in OVM readings from 0 to 125-287 ppm, Hydrocarbon odor.	SM/ML	?					
	1-8 34-36	Y	314 349 349	2	17-19' Sand, "speckled" Brn./Gray*, fine to medium grained, sub-angular to sub rounded, minor fine gravel, wet, Hc odor	SP/SW	1 2 5				* wtr at 18.1 9/8/94	
20					* "speckled" Brn./Gray - combination of Dark Gray (N3) shale/mineral frags. and Lt. Olive Gray (5Y6/1) and Olive Gray (5Y4/1) sand.  Drilling TD 17' Sample TD 19'							

U = Thin Wall Tube  
 S = Split spoon (tube)  
 C = Cuttings

R = Rock Coring  
 O = Other  
 Notes: \_\_\_\_\_

Field G/C (Make/Mod.) \_\_\_\_\_

G/C Oper.: \_\_\_\_\_

BORING LOG	BORING/WELL NO.: V4- <del>SB</del> -2	Page 1 of 1
Installation: VTANG		Site: SI Site 4, <del>SB</del> -2
Project No.: 931802-08		Client/Project: HAZWRAP/ANG
HAZWRAP Contractor: Earth Tech		Drill Contractor: Parrott-Walker
Drill Started: 9/7/44 (16:19 P.M.)		Driller: Rick Navatka
Drill Ended: 9/7/94 (16:55 P.M.)		Borehole dia(s): 8-inch
Drill Method/Rig Type: HSA <sub>5</sub> (4.25" ID)/CME-75		
Logged by: G. Maynor		E-Log (Y/N) From _____ to _____
		Protection Level: D

\* Grass At Surface

Depth (ft)	Sample No.	Lab No.	Anal. (Y/N)	Recovery (%)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0					0-4' Silty Sand/Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn. (10YR 5/4), very fine to fine grained, tr. coarse gravel, tr. moisture	SM/ML						
5	V4-B2-0906		N	0	4-6' AS Above.	SM/ML	2-3			15 min. Hdsp. 4.9 ppm		*1628
					4-9' Silt/sand, AS Above	SM/ML						
10	V4-B2-0911		N	0	9-11' Silt/Sand, AS Above	SM/ML	2-5			15 min. Hdsp. 0.8 ppm		*1636
					9-14 AS Above, w/ incr. in fine to medium grained sand at depth	SM/ML						
15	V4-B2-1416		N	4	14-16' Sand, Gray (N4) and Mod. Yel. Brn. (10YR 5/4), dominantly medium grained, w/ fine gravel	SP	2-3			15 min. Hdsp. 22 ppm		*1642
					14-19 AS above, w/ return to silty Sand/Sandy Silt, as above, Olive Gray (5Y4/1)	SM/ML				* wtr 19.1 ppm		
20	V4-B2-1921		N	2	19-21' Silty Sand/Sandy Silt, Olive Gray (5Y4/1), v. fine grained, wet Hydrocarbon odor.	SM/ML	3-6			15 min. Hdsp. 133 ppm		*1655
					w/ other OVM, cuttings indicated HC vapors of 28-197 from ~16-19 ft bgs.							
					*N/A - ovm readings - ovm malfunction (wet), switched to other unit.							
					TD 21'							

U = Thin Wall Tube  
 (S) = Split spoon (tube)  
 (C) = Cuttings

R = Rock Coring  
 O = Other  
 Notes:

Field G/C (Make/Mod.)  
 G/C Oper.:

BORING LOG	BORING/WELL NO.: V4- <del>SB</del> -3	Page <u>1</u> of <u>1</u>
Installation: VTANG	Client/Project: HAZWRAP/ANG	Site: SI Site 4, <del>SB</del> -3
Project No.: 931802-08	HAZWRAP Contractor: Earth Tech	Drill Contractor: Parratt Wolff
Drill Started: 9/7/94 (14:48 P.M.)	Drill Ended: 9/7/94 (15:19 P.M.)	Borehole dia(s): 8-inch
Drill Method/Rig Type: HSA <sub>S</sub> (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From <u>      </u> to <u>      </u>	Protection Level: D

\* Gress at surface

Depth (ft)	Sample No.	Lab	Anal. (Y/N)	Recovery (%)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0-4'			N/A		Silty Sand/Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn. (10YR 5/4), v. fn. to fn. grn., tr. to sli. moist.	SM/ML						
4-6'			N/A		Sand/Silt, AS above	SM/ML	2			15 min. Hdsp.		
6-9'			N/A		AS above.	SM/ML				0 ppm		
9-11'			N/A		Sand, olive gray (5Y4/1), fine to medium grained, sub-ang to sub-rnd., moist, tr. of iron staining/layering.	SP	3			15 min Hdsp.		
11-14'			N/A		Sand, AS above.	SP				0 ppm	coarsen down	
14-16'			N/A		Sand, Gray (N4) and Mod. Yel. Brn. (10YR 5/4), dom. medium grained, w/ minor fine gravel to coarse gravel, wet, clayey silt, Gray (N4), wet at 15.9-16.0'	SP/ML	3			15 min. Hdsp.		
16-19'			N/A		Sand, AS above, mixed (silt?)	SP/ML	4			0.5 ppm		
19-21'			N/A		Silty Sand/Sandy Silt, olive gray (5Y4/1), v. fn. to fn. grn., wet.	SM/ML	6			* wtr ~ 19' on spom		
										15 min Hdsp.	2.2 ppm	

Drilling TD 19'  
Sample TD 21'

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.)
S = Split spoon (tube)	O = Other	G/C Oper.:
C = Cuttings	Notes:	



BORING LOG	BORING/WELL NO.: V4- <del>SB</del> -4 / MW-2	Page 1 of 1
Installation: VTANG-	Site: SI SITE 4 - <del>SB</del> -4	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	--
HAZWRAP Contractor: Earth Tech	Drill Contractor: Parratt Wolfe	Driller: Ron Bush
Drill Started: 9/3/94 (9:29 A.M.)	Drill Ended: 9/3/94 (10:19 A.M.)	Borehole dia(s): 8-inch
Drill Method/Drill Type: HSA5 (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From _____ to _____	Protection Level: D

\*Grass AT SURFACE

Depth (ft)	Sample No.	Lab	Anal. (Y/N)	Recovery (%)	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0					0-4' Silty Sand / Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn (10YR 5/4), very fine to fine, sli. moist.	SM						
5					4-6' AS ABOVE w/ Olive Gray (5Y 3/2)	SM				15 min. Hds. 0 ppm		9937
					4-9' Silt/Sand, AS ABOVE.	SM						
10					9-11' Silt/Sand, AS ABOVE, w/ dominantly fine grained sand	SM				15 min. Hds. 0 ppm		9945
					9-17' Silt/Sand, AS ABOVE.	SM						
15												
					17-19' Sand, Gray (NS) & Mod. Yel. Brn. (10YR 5/4), fine to medium grn., sub-ang. to sub-round, moist, HC odor.	SP				15 min Hds 125 ppm (see spoon readings)		9958
20					17-24' AS ABOVE. Sand consists of fine to medium grn. silica, w/ dk. gray weathered shale and mineral (hornblende?) frags. Gives a speckled appearance w/ tones of olive gray (5Y 6/1-4/1).	SP				* wtr 19.2' bgs 0920 9/14/94.		
25					24-26' Sand, Olive Gray (5Y 4/1), fine grained w/ silt, w/ tr. medium grained, wet.	SP						1017
					24-29' Sand, Olive Gray, AS ABOVE. wet cuttings picking up HC vapors as they pass through water table.	SP						
30					29-31' Sand, as above, wet. No odor	SP						9961 1019 1031
35					Drilling TD 29' Sample TD 31' * Added 25 gal potable wtr during drilling. due to heaving sand.							

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.)
S = Split spoon (tube)	O = Other	G/C Oper.:
C = Cuttings	Notes:	

BORING LOG	BORING/WELL NO.: V4-5B-5	Page 1 of 1
Installation: VTANG	Site: SI Site 4, 5B-5	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drill Contractor: Barrett Wolff	Driller: Joe Perry
Drill Started: 9/14/94 (9:25 A.M.)	Drill Ended: 9/14/94 (9:53 A.M.)	Borehole dia(s): 8-inch
Drill Method/Rig Type: HSA's (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From _____ to _____	Protection Level: D

Depth (ft)	Sample No.	Lab	Anal. (Y/N)	Recovery (%)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0					0-4' Silty Sand/Sandy Silt, Brown (10 YR 5/3) to Mod. Yel. Brn. (10YR 5/4), very fine to fine grn., micaceous, sli. moist	\$M/ML?						
5	94-085 10406				4-6' AS Above.	\$M/ML	3					2932
					4-9' Sand/Silt, AS Above	\$M/ML						
10	94-086 11360				9-11' Sand/Silt AS Above, w/ olive Brown (2.5Y 4/3) + olive Gray (5Y 4/2)	\$M/ML	3 3/4					2933
					9-17' Sand/Silt, olive Brown, AS Above, sli. moist, abundant mica flakes (common in all samples across the site.)	\$M/ML						
15					17-17.6' Sand/Silt, AS Above	\$M/ML	2					2933
	94-087 11361				17.6-19' Sand, "speckled" Brn/Gray (**), fine to coarse grn, wet ~ 18.3'	\$M/ML	3					2933
20					contains fine to coarse frags of dk gray shale + minerals(?), HC odor and DK Gray HC staining evident.							
					** DK Gray (N6) w/ Lt. olive Gray (5Y 6/1) and olive Gray (5Y 4/1).							
					Drilling TD 17'							
					Sample TD 19'							

(U) = Thin Wall Tube (\$) = Split spoon (tube) (C) = Cuttings	R = Rock Coring O = Other Notes:	Field G/C (Make/Mod.) G/C Oper.:
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BORING LOG	BORING/WELL NO.: V4 - SB-6	Page 1 of 1
Installation: VTANG		Site: SI Site 4, SB-6
Project No.: 931802-08		Client/Project: HAZWRAP/ANG
HAZWRAP Contractor: Earth Tech		Drill Contractor: Parrott Wolf Driller: Ron Bush
Drill Started: 9/7/94 (13:05 PM)		Drill Ended: 9/7/94 (14:15 PM)
Borehole dia (st): 8-inch		
Drill Method/Rig Type: Hollow-Stem Augers (HSA's) (4.25" ID) / CME-75		
Logged by: G. Maynor		E-Log (Y/N) From _____ to _____ Protection Level: D

\* Grass At Surface

Depth (ft)	Sample No.	Anal. (Y/N)	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks
0			0-4' Silty Sand/Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn. (10YR 5/4), very fn. to fn. grn., tr. to slight moisture	SM/ML					
5	4-86 V4-86 931802-08	N	4-6' Sand/Silt, AS Above	SM/ML	24			15 min. Hdsp. 0 ppm	#1318
			4-9' AS Above, tr. moisture	SM/ML					
10	4-86 V4-86 931802-08	N	9-11' Sand, Lt. olive Gray (5Y 4/1), fine to medium grained, sub-angular to sub-rounded, slightly moist	SP	4			15 min. Hdsp. 0 ppm	#1336
			9-14' AS Above	SP					
15	4-86 V4-86 931802-08	N	14-16' Sand, AS Above, w/ Sandy Silt, olive Gray, moist.	SP/SM	4			15 min. Hdsp. 0 ppm	#1344
			14-19' AS Above. Silt/SAND	SP/SM					
20	4-86 V4-86 931802-08	N	19-21' Sand, DK yel. Brn. (10YR 4/2), dominantly medium grained w/ minor coarse gravel, loose, moist.	SP	4			15 min. Hdsp. 0 ppm	#1355
			19-24' AS Above.	SP				Water ~24' bgs 1415 9/7/94.	
25	4-86 V4-86 931802-08	N	24-26 Sand + Silt, olive gray, fn to med. grn sand w/ silt, wet	SM	3			15 min. Hdsp. 0 ppm	#1408
			* olive Gray (5Y 4/1)						
			Drilling TD 24'						
			Sample TD 26'						

U = Thin Wall Tube  
 S = Split spoon (tube)  
 C = Cuttings

R = Rock Coring  
 O = Other  
 Notes:

Field G/C (Make/Mod.)

G/C Oper.:

BORING LOG	BORING/WELL NO.: V4-MW-1	Page 1 of 1
Installation: VTANG	Site: SI Site	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drill Contractor: Parrott Wolff	Driller: Ron Bush
Drill Started: 9/8/94 (13:17 PM)	Drill Ended: 9/8/94 (13:45 PM)	Borehole dia(s): 8-inch
Drill Method/Rig Type: HSA's (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From to	Protection Level: D

Depth (ft)	Sample No.	Lab Anal. (Y/N)	Recovery (ft)	Lithologic Description	USCS	Blows / 6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0											
0-5'				Silty Sand/Sandy Silt, Brown (10YR 5/3), sli. moist, v. fine to fine grn., trace of wood and plant matter.	SM ML	N/A					
5-10'				Silt/Sand w/ Mod Yel. Brown (10YR 5/4), sli. moist, loose.	SM ML						
10-15'				AS Above w/ medium to coarse grains of weathered dk gray shale (N3) ~ 15'	SM						
15-20'				AS above w/ shale frags + fine to coarse sand: Sand, "Speckled" Brn/ to Gray, fine to med, w/ minor coarse and fine gravel, Hc odor ~ 17'.	SM ML SW	9/10/94				water 17.55' Nov 5 11/19/94	
20-25'				Sand (Silt?) AS Above.	SM ML SW	?				* Hydrocarbon odor - 17'	
25'				Drilling TD 25 ft.							
				* Added ~10 gal potable wtr during drilling (heaving sands).							

U = Thin Wall Tube  
S = Split spoon (tube)  
C = Cuttings

R = Rock Coring  
O = Other

Field G/C (Make/Mod.)

G/C Oper.:

Notes:

BORING LOG	BORING/WELL NO.: V4-MW-3	Page 1 of 2
Installation: VTANG		Site: SI Site 4, MW-3
Project No.: 931802-08 Client/Project: HAZWRAP/ANG		
HAZWRAP Contractor: Earth Tech		Drill Contractor: Parrott Wolff
Drill Started: 9/9/94 (10:00 A.M.)		Drill Ended: 9/9/94 (12:25 P.M.)
Drill Method/Rig Type: HSA-s (4.25" ID) / CME-TS		Borehole dia(s): 8-inch
Logged by: G. Maynor		E-Log (Y (N)) From _____ to _____
Protection Level: D		

\* Gross at surface

## Lithologic Description

Depth (ft)	Sample No.	Sample Lab	Analy. (Y/N)	Recovery (%)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0					0-4' Silty Sand/Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn. (10YR 5/4), very fine grained, tr. moist.	\$M ML?						
5					4-6' Sand & Silt, as above	\$M ML	3 4 5					
					4-9' Sand/Silt, as above	\$M ML						
10					9-11' Sand, Specified "Brn/Gray (N6) w/ Lt. olive Gray (5Y 4/1) and Olive Gray (5Y 4/1), dom. fn. to medium grained w/ minor coarse sd & fine gravel (quartz & shale frags), sli moist.	\$P \$W	1 3 5					
					9-14' AS Above.	\$P \$W						
15					14-16' Sand, AS Above, dom. fine to medium grained sand.	\$P \$W	2 5 6					
					14-19' Sand, AS Above, dom. fine to medium grn. sand.	\$P \$W						
20					19-21' Sand, *Olive Gray (5Y 4/1) fine grained, w/ silt minor, wet loose	\$M \$P	1 2 3					
					19-24' Sand/Silt, AS Above	\$P \$M						
25					24-26' AS Above Sand w/ silt,	\$M	1 2 3					
					24-29' AS Above.	\$M						
30					29-31' AS Above, sand contains flakes of mica (evident in all samples).	\$M	3 4 5					
					29-34 AS Above	\$M						
35					34-36' AS Above	\$M	3					

\* wtr 18.95'  
1040 9/9/94

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.)
(B) Split spoon (tube)	O = Other	G/C Oper.:
(C) Cuttings	Notes:	

BORING LOG	BORING/WELL NO.: V4-MW-3	Page 2 of 2
Installation: VTANG	Site: SI Site 4, MW-3	
Project No. 93180	Client/Project: HAZWRAP/ANG.	
HAZWRAP Contractor: EarthTech	Drill Contractor: Parratt Wolff	Driller: R. Navatka
Drill Started: 9/9/94 (10:00 A.M.)	Drill Ended: 9/9/94 (12:25 P.M.)	Borehole dia (st): 8-inch
Drill Method/Rig Type: HSAs (4.25" ID) / CME-7S		
Logged by: G. Mayner	E-Log (Y/N) From to	Protection Level: D

\* Grass at surface

Depth (ft)	Sample No.	Lab	Anal. (Y/N)	Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
35					34-36' Sand w/ silt, olive gray (54%)	\$M	4					
					34-39' Sand w/ silt, As Above	\$M						
					39-41' Sand w/ silt, As above.	\$M	4					
40					39-44' As Above	\$M						
					44-46' As Above 44-45.9' * 45.9 - 46' clayey silt, Gray (NG) w/ fine grn. sand, low plasticity, soft, wet.	\$M ML	4					
45					44-49' Sand w/ silt, olive gray.	\$M						
					49-51' Sand w/ silt, no clayey silt	\$M	3					
50					* 49-53' silt/sand, Gray (NG), v. fine grn. wet, no plasticity, soft, w/ minor fragments of Lt. Brownish Gray (54%) claystone fragments, layered, planar frags. * (off of lead auger)	\$M ML						
55					Drilling TD 53' Sample TD 51'							
					** Added 100 gal of potable wtr during drilling and sampling, most below 40+ ft.							
					*** Augers Locked up ~ 53' unable to drill deeper due to heaving fine grained sediments. Unable to determine depth to bedrock.							

\* No Analytical Samples, Lithologic Sampling Only

U = Thin Wall Tube	R = Rock Coring	Field G/C (Make/Mod.)
(S) = Split spoon (tube)	O = Other	G/C Oper.:
(C) = Cuttings	Notes:	



V3-MW-1

9/14/94

Fieldbook: 931802-02/10, BK#2 PP 95-97  
REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount	
WELL NO.: V4-MW-1	Installation: VTANG
Project No.: 931802-03	Client/Project: HAZWRAP/ANG
HAZWRAP Contractor: EARTH TECH	Drig Contractor: Parrott Wolff
Comp. Start: 9/13/94 (16:47 P.M.)	Comp. End: 9/13/94 (18:15 P.M.)
Built By: G. Maynor (ET), R. Navatka (PW)	Well Coord: .

Elev. \_\_\_\_\_  
Height ~ 0.0'  
GS Elev. \_\_\_\_\_  
GS Height 0.00'  
Depth BGS \_\_\_\_\_

Elev. \_\_\_\_\_  
Depth BGS 0.35'  
8.32'  
9/14/94

\* Added 25 gal wtr on 9/15/94 during drilling.

\* wtr level 9/15/94: 18.32' BTOL.

11  
14  
15.8

3

12.1

11.8

25.8

26.1

26.1

N/A

TD: 26.1

8-inch  
Borehole dia.

## PROTECTIVE CSG

Material / Type circular Metal Flush "box" bolted  
Diameter 8-inches (0.67')  
Depth BGS 8-inches (0.67')  
Watertight O-Ring (Y/N)

## SURFACE PAD

Concrete  
Composition & Size 2 Ft diameter x 0.5 Ft deep  
Breathes With Vadose Zone (Y/N)

## RISER PIPE

Type Dietrich Schedule 40 PVC w/o-rings  
Diameter 2-inch  
Total Length (TOC to TOS) 15.45'  
Ventilated Cap (Y/N) Locking/expandable cap.

## GROUT

3-11'  
Composition & Proportions Volclay-Equivalent mix  
4/5 Bag (50lbs/bag) Wyo-Ben Bentonite mix w/  
Tremied (Y/N) Hole open. 15-20 gal. wtr.  
Interval BGS 3-11' bgs.

## CENTRALIZERS

(Y/N)  
Depth(s) N/A

## SEAL

11-14'  
Type Enviroplug Medium Bentonite Chips  
Source Parrott Wolff 2 bags (50lbs/bag)  
Setup/Hydration time 20 min Vol. Fluid Added 6 gal.  
Tremied (Y/N) Hole open.

## FILTER PACK

14-26.1'  
Type MORIE O mesh Silica Sand  
Amt. Used 8 2/3 bags (50lbs/bag)  
Tremied (Y/N)  
Source Parrott Wolff  
Gr. Size Dist. medium grain ("fine" medium)

## SCREEN

15.8-25.8'  
Type Dietrich Schedule 40 PVC w/o-rings  
Diameter 2-inch  
Slot Size & Type 0.01-inch slot (machine cut)  
Interval BGS 15.8-25.8' 9/15/94  
\* screen slots offset approx 0.1 to 0.25

## SUMP

(Y/N) see cap Length see cap  
Interval BGS see cap  
Bottom Cap (Y/N) 25.8-26.1'

## BACKFILL PLUG

Material N/A  
Setup/Hydration time N/A  
Tremied (Y/N) N/A



V3-MW-2

Fieldbook 931802-08/10, BK#2, pp. 107-107. REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount		
WELL NO.: V3-MW-2	Installation: VTANG	Site: SI Site 3, MW-2
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drig Contractor: Parrett Wolff	
Comp. Start: 9/14/94 (15:10 P.M.)	Comp. End: 9/14/94 (16:30 P.M.)	
Built By: G. Maynor (ET), R. Navatke (PW)		Well Coord: .

Elev. \_\_\_\_\_  
 Height ~ 0.0'  
 GS Elev. \_\_\_\_\_  
 GS Height 0.00'  
 Depth BGS \_\_\_\_\_

Elev. \_\_\_\_\_  
 Depth BGS 6.4

\* Added ~ 10-15  
 gal wtr during  
 drilling.

\* wtr level  
 9/15/94  
 17.48'  
 B70C

9.5  
 13  
 15.05

3.5

12.35

12.05

25.05

25.35

25.35

N/A

TD: 25.35

8-inch  
 Borehole dia.

#### PROTECTIVE CSG

Material / Type circular Metal Flush "box", bolted  
 Diameter 8-inches (0.67')  
 Depth BGS 8-inches (0.67')  
 Watertight O-Ring (Y/N)

#### SURFACE PAD Concrete

Composition & Size 2 ft diameter x 0.5 ft deep  
 Breaches With Vadose Zone (Y/N)

#### RISER PIPE

Type Diedrich Schedule 40 PVC w/ orings  
 Diameter 2-inch  
 Total Length (TOC to TOS) 14.65'  
 Ventilated Cap (Y/N) locking/expandable cap

#### GROUT

Composition & Proportions Volclay Equivalent Mix:  
3/5 Bag (50lbs/bag) Wyo-Ben Bentonite mix  
 Tremied (Y/N) Hole open w/1st gal wtr.  
 Interval BGS 2.5 - 9.5

#### CENTRALIZERS (Y/N)

Depth(s) N/A

#### SEAL 9.5-13'

Type Enviroplug Medium Bentonite Chips  
 Source Parrett Wolff 2 bags (50lbs/bag)  
 Setup/Hydration time 20 min Vol. Fluid Added 6 gal wtr  
 Tremied (Y/N) Hole open

#### FILTER PACK 13-25.35'

Type Morie O Merh Silica Sand  
 Amt. Used 7 bags (50lbs/bag)  
 Tremied (Y/N)  
 Source Parrett Wolff  
 Gr. Size Dist. medium grained ("fine" med.)

#### SCREEN

Type Diedrich Schedule 40 PVC w/ orings  
 Diameter 2-inch  
 Slot Size & Type 0.01-inch slot (machine cut)  
 Interval BGS 15.05 - 25.05

#### SUMP (Y/N)

Interval BGS see cap Length see cap  
 Bottom Cap (Y/N) 25.05 - 25.35 (0.3')

#### BACKFILL PLUG

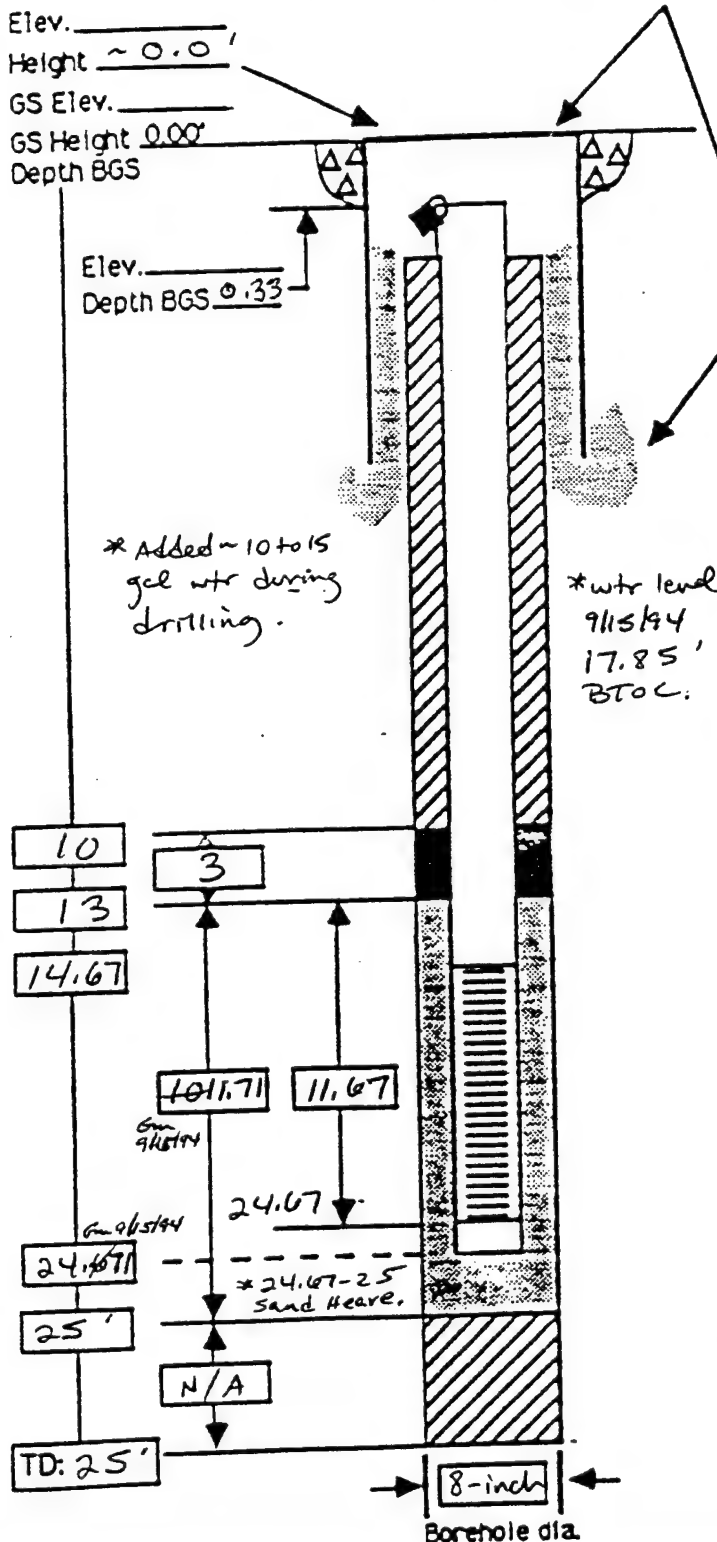
Material N/A  
 Setup/Hydration time N/A  
 Tremied (Y/N) N/A

V3-MW-3

Fieldbook: 931802-08/10, BX#2, pp 104/105 REV. DATE: MAY 1990

## MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V3-MW-3	Installation: VTANG	Site: SI Site 3, MW-3
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Orig Contractor: Parrott Wolff	
Comp. Start: 9/14/94 (13:00 PM)	Comp. End: 9/14/94 (14:30 PM)	
Built By: G. Maynor (ET), R. Navatka (PW)	Well Coord.: .	



## PROTECTIVE CSG

Material / Type circular Metal Flush "box", bolted  
Diameter 8-inches (0.67')  
Depth BGS 8-inches (0.67')  
Watertight O-Ring (Y/N)

## SURFACE PAD

Concrete/cement  
Composition & Size 2 ft diameter x 0.5 ft deep  
Breathes With Vadose Zone (Y/N)

## RISER PIPE

Type Driedrich Schedule 40 PVC w/ orings  
Diameter 2-inch  
Total Length (TOC to TOS) 14.37'  
Ventilated Cap (Y/N) Locking/expandable cap

## GROUT 2.3-10'

Composition & Proportions volclay Equivalent Mix:  
~3/5 Bag (50lbs/bag) Wyo-Ben Bentonite  
Tremied (Y/N) mix w/ 1st gal wtr  
Interval BGS 2.3-10' bgs

## CENTRALIZERS

(Y/N) N/A  
Depth(s) \_\_\_\_\_

## SEAL 10-13'

Type Enviroplug Medium Bentonite Chips  
Source Parrott Wolff  
Setup/Hydration time 20 min Vol. Fluid Added ~6 gal wtr.  
Tremied (Y/N) hole open

## FILTER PACK 13-24.71'

Type Morie O Mesh Silica Sand  
Amt. Used 5 2/3 bags (50lbs/bag)  
Tremied (Y/N)  
Source Parrott Wolff  
Gr. Size Dist. medium grain ("fine" medium)

## SCREEN 14.67-24.67

Type Driedrich Schedule 40 PVC w/ o-rings  
Diameter 2-inch  
Slot Size & Type 0.01-inch slot (machine cut)  
Interval BGS 14.67-24.67

## SUMP (Y/N)

N/A Length N/A  
Interval BGS N/A  
Bottom Cap (Y/N) 24.67-24.71' (0.04')

## BACKFILL PLUG

Material N/A  
Setup/Hydration time N/A  
Tremied (Y/N) N/A



MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount	
WELL NO.: V4-BG-1	Installation: VTANG
Project No.: 931802-08	Client/Project: HAZWRAP/ANG
HAZWRAP Contractor: EARTH TECH	Orig Contractor: PARZATT WOLFE
Comp. Start: 9/10/94 (15:30 P.m)	Comp. End: 9/16/94 (08:00 A.m)
Built By: G. Maynor (EarthTech) R. Bush (Parzatt Wolff)	
Well Coord.: _____	

Elev. \_\_\_\_\_  
 Height ~ Surface 0'  
 GS Elev. \_\_\_\_\_  
 GS Height 0.00'  
 Depth BGS \_\_\_\_\_

Elev. \_\_\_\_\_  
 Depth BGS 0.5'

\* ENLARGED Borehole  
 from ~17.8 to  
 22.5' (wtr. table)  
 of ~2.2. Ft  
 due to reverse  
 spin on augers  
 during auger  
 removal.

\* Added ~80  
 gallons potable  
 wtr during  
 drilling, most  
 below depth  
 of well.

\* wtr level  
 22.55' bgs  
 9/10/94

14.3  
 17.8  
 19.14

18.1 11.34

29.18  
 35.9

5.1

\* TD: 41

\* Augered to 95' bgs.  
 Pulled augers up to 29  
 - 30 ft. Hole collapse/  
 heaving sand/silt  
 40' d.t. to 95' bgs.  
 On 9/10/94.

Borehole dia.

#### PROTECTIVE CSG

Material / Type circular metal flush "box", bolted  
 Diameter 8 inches (0.67')  
 Depth BGS 8 inches (0.67')  
 Watertight O-Ring (Y/N)

#### SURFACE PAD

Material concrete  
 Composition & Size 2 ft diameter x 0.5 ft deep  
 Breaches With Vadose Zone (Y/N)

#### RISER PIPE

Type Dredrich Schedule 40 PVC w/ o-rings  
 Diameter 2-inch  
 Total Length (TOC to TOS) 28.68  
 Ventilated Cap (Y/N) Locking/expandable cap

#### GROUT

Composition & Proportions Volclay - Equivalent Mix:  
 1 Bag (50 lbs/bag) w/yo-Ben Bentonite Mix w/2c  
 Tremied (Y/N) Hole open to surface. gal wt.  
 Interval BGS 2.5 - 14.3'

#### CENTRALIZERS

(Y/N)  
 Depth(s) N/A

#### SEAL 14.3 - 17.8 (2.5')

Type Enviroplug Medium Bentonite Chips  
 Source Parzatt Wolff 1.5 bags (50 lbs/bag)  
 Setup/Hydration time 13 Hrs. Vol. Fluid Added 7 gal wtr.  
 Tremied (Y/N) Hole open below augers.

#### FILTER PACK 17.8 - 35.9

Type Merie O Mesh Silica Sand  
 Amt. Used 34 (50) lb bags  
 Tremied (Y/N) (7 bags from 22.5 to 35.9')  
 Source Parzatt Wolff  
 Gr. Size Dist. medium grain ("fine" medium)

#### SCREEN

Type Dredrich Schedule 40 PVC w/ o-rings  
 Diameter 2-inch  
 Slot Size & Type 0.01-inch slot (machine cut)  
 Interval BGS 19.14 - 29.14, On 9/10/94  
 \* Screen slots offset approx 0.3" from each end.

#### SUMP

(Y/N) N/A Length N/A  
 Interval BGS (Y/N) 29.14 - 29.18' (0.04')  
 Bottom Cap (Y/N)

#### BACKFILL PLUG

Material Enviroplug Medium Bentonite Chips  
 Setup/Hydration time 20 minutes  
 Tremied (Y/N)

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount		Site: SI Site 4, MW-1
WELL NO.: V4-MW-1	Installation: VTANG	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drig Contractor: Parrott Wolfe	
Com. Start: 9/8/94 (13:45 P.m)	Com. End: 9/8/94 (15:45 P.m)	
Built By: G. Mayner (Earth Tech), R. Bush (Parrott Wolfe)		Well Coord.: .

Elev. \_\_\_\_\_  
 Height: ~0.0'  
 GS Elev. \_\_\_\_\_  
 GS Height 0.00'  
 Depth BGS \_\_\_\_\_

**PROTECTIVE CSG**  
 Material / Type circular metal flush "box", bolted  
 Diameter 8-inches (0.67')  
 Depth BGS 8 inches (0.67')  
 Watertight O-Ring (Y/N)

**SURFACE PAD** concrete  
 Composition & Size 2 ft diameter x 0.5 ft deep  
 Breaches With Vadose Zone (Y/N)

**RISER PIPE**  
 Type Diedrich Schedule 40 PVC w/ o-rings  
 Diameter 2-inch on 9/8/94  
 Total Length (TOC to TOS) 14.29' 14.34'  
 Ventilated Cap (Y/N) locking/expandable cap

**GROUT** 3-9'  
 Composition & Proportions Volclay-Equivalent mix  
~ 1/2 bag (50lb/bag) Wyco-Ben Bentonite Mix  
 Tremied (Y/N) open hole. w/ 15 gal. wtr.  
 Interval BGS 3-9' bgs.

**CENTRALIZERS** (Y/N)  
 Depth(s) N/A

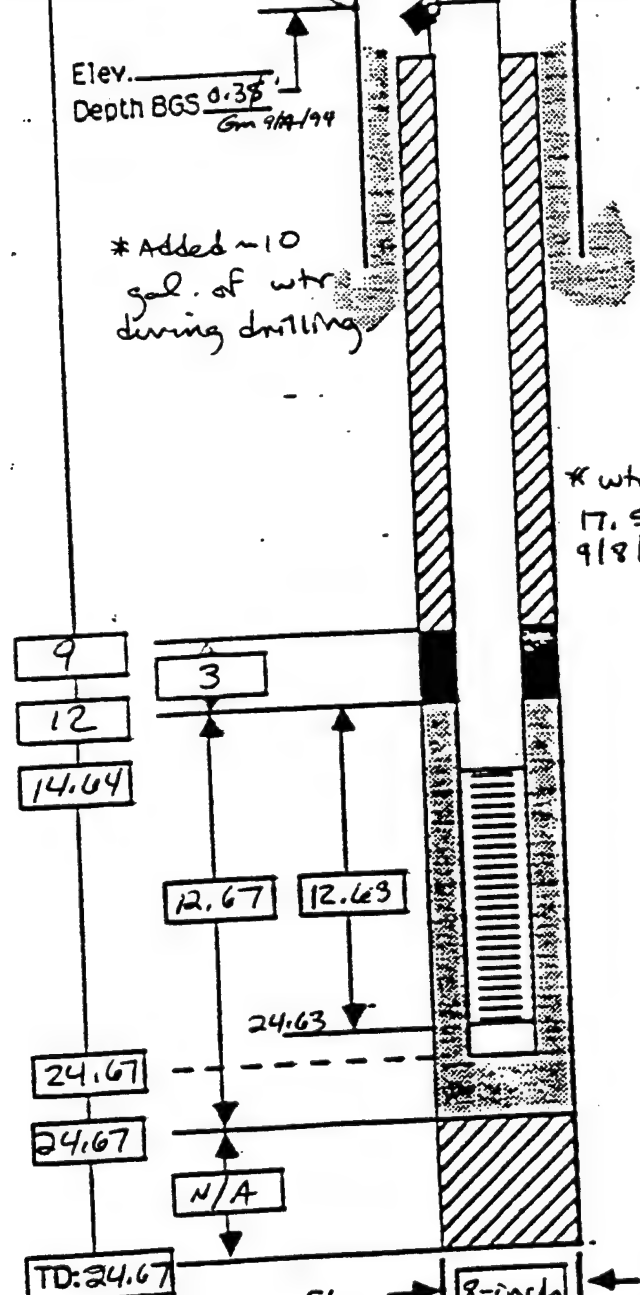
**SEAL** 9-12'  
 Type Enviroplug Medium Bentonite Chips  
 Source Parrott Wolfe 12 bags (50lbs/bag)  
 Setup/Hydration time 30 min. Vol. Fluid Added 5-6 gal.  
 Tremied (Y/N) Hole open below augers.

**FILTER PACK** 12-24.67'  
 Type Morie O Mesh Silica Sand  
 Amt. Used 7 bags (50lbs/bag)  
 Tremied (Y/N)  
 Source Parrott Wolfe  
 Gr. Size Dist. medium grain ("fine" & medium)

**SCREEN** 14.64-24.63' (9.99')  
 Type Diedrich Schedule 40 PVC w/ o-rings  
 Diameter 2-inch  
 Slot Size & Type 0.01-inch slot (machine cut)  
 Interval BGS 14.64-24.63  
\* screen slots ~ 0.01" from each end of screen  
\* screen slots ~ 0.11-0.25' on 9/10/94

**SUMP** (Y/N) N/A Length N/A  
 Interval BGS \_\_\_\_\_  
 Bottom Cap (Y/N) 24.67-24.63' (0.06')

**BACKFILL PLUG**  
 Material N/A  
 Setup/Hydration time N/A  
 Tremied (Y/N) N/A



\* Added ~10 gal. of wtr. during drilling

\* wtr level  
 17.55' bgs  
 9/8/94.

\* Drilled to ~25 ft  
 Sand Heave probably  
 from 24.67 to 25 ft.  
 on 9/8/94.

## MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V4-MW-2 Installation: VTANG Site: SE site 4, MW-2  
 Project No.: 931802-08 Client/Project: HAZWRAP/ANG  
 HAZWRAP Contractor: Earth Tech Drig Contractor: Parrott Wolff  
 Comp. Start: 9/8/94 (16:00 P.M.) Comp. End: 9/8/94 (17:30 P.M.)  
 Built By: G. Maynor (Earth Tech) Ron Bush (Parrott Wolff) Well Coord.: .

Elev. \_\_\_\_\_  
 Height: 0.0'  
 GS Elev. \_\_\_\_\_  
 GS Height 0.00'  
 Depth BGS \_\_\_\_\_

Elev. \_\_\_\_\_  
 Depth BGS 0.4'  
 0.32'  
 Gm 11/16/94

\* Added ~ 25 gal. potable water during drilling.

\* wtr level  
 19.08 ft  
 bgs 1600  
 9/8/94.

## PROTECTIVE CSG

Material / Type Circular metal flush "box", bolted  
 Diameter 8-inches (0.67')  
 Depth BGS 8-inches (0.67')  
 Watertight O-Ring (Y/N)

## SURFACE PAD concrete

Composition & Size 2 ft diameter x 0.5 ft deep  
 Breaches With Vadose Zone (Y/N)

## RISER PIPE

Type Dietrich Schedule 40 PVC w/o-rings  
 Diameter 2-inch  
 Total Length (TOC to TOS) 15.27'  
 Ventilated Cap (Y/N) Locking/Expandable Cap

## GROUT

Composition & Proportions Volclay - Equivalent Mix: 1/2  
 1/3 bags (50 lbs/bag) w/40-Ben Bentonite Mix  
 Tremied (Y/N) Hole open. w/ 15 gal. wtr  
 Interval BGS 2.5 - 10.8' bgs

## CENTRALIZERS (Y/N)

Depth(s) N/A

## SEAL 10.8-14'

Type ENVIROPLUG-Medium Bentonite chips  
 Source Parrott Wolff 1 1/3 bags (50 lbs/bag)  
 Setup/Hydration time 30 min. Vol. Fluid Added 6 gal.  
 Tremied (Y/N) hole open below augers.

## FILTER PACK 14-29'

Type MORIE 0 Mesh silica Sand  
 Amt. Used 6 bags (50 lbs/bag)  
 Tremied (Y/N)  
 Source Parrott Wolff  
 Gr. Size Dist. medium ("fine medium")

## SCREEN

Type Dietrich Schedule 40 PVC w/o-rings  
 Diameter 2-inch  
 Slot Size & Type 0.01-inch slot (machine cut)  
 Interval BGS 15.67 - 25.66 (9.99')  
 \* screen slots offset approx. 1/2" from each other to 0.25' Gm 9/19/94

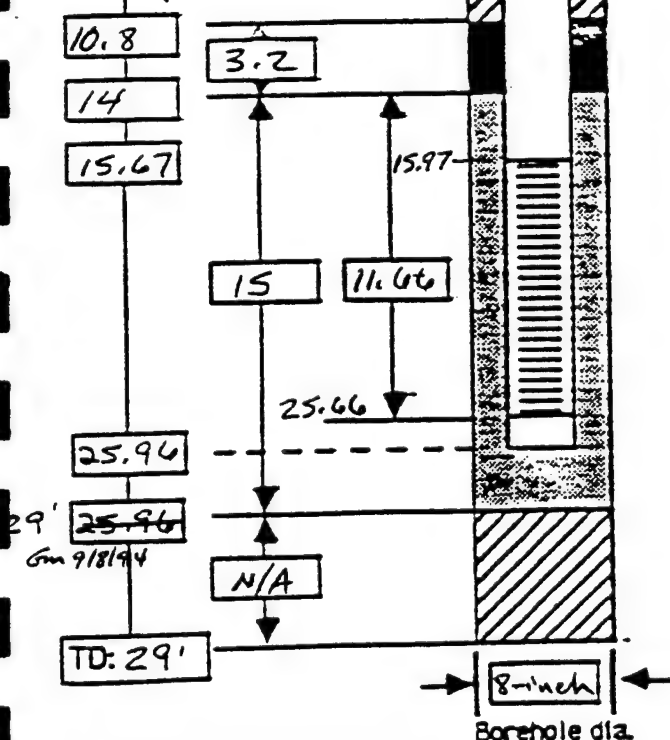
## SUMP (Y/N)

Interval BGS see cap Length see cap  
 Bottom Cap (Y/N) 25.46 - 25.96 (0.3')

## BACKFILL PLUG

Material N/A  
 Setup/Hydration time N/A  
 Tremied (Y/N) N/A

Borehole dia.



## MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V4-MW-3 | Installation: VTANG | Site: SI Site 4, MW-3  
 Project No.: 931802-08 | Client/Project: HAZWRAP / ANG  
 HAZWRAP Contractor: Earth Tech | Orig Contractor: Parrott Wolff  
 Comp. Start: 9/9/94 (12:45 P.m.) | Comp. End: 9/9/94 (1:57 P.m.)  
 Built By: G. Maynor (Earth Tech), R. Navatka (Parrott Wolff) | Well Coord.: .

Elev. \_\_\_\_\_  
 Height ~ 0.0'  
 GS Elev. \_\_\_\_\_  
 GS Height 0.00'  
 Depth BGS \_\_\_\_\_

Elev. \_\_\_\_\_  
 Depth BGS 0.35'

\* Added ~ 100 gal. of wtr during drilling (most below 40 ± ft bgs).

\* wtr. level 18.95 ft. bgs.  
 1040 9/19/94

## PROTECTIVE CSG

Material / Type circular flush "box", bolted  
 Diameter 8-inches (0.67')  
 Depth BGS 8-inches (0.67')  
 Watertight O-Ring (Y/N)

## SURFACE PAD concrete

Composition & Size 1.5 ft diameter x 0.5 ft deep  
 Breaches With Vadose Zone (Y/N)

## RISER PIPE

Type Dietrich Schedule 40 PVC w/o-rings  
 Diameter 2-inch  
 Total Length (TOC to TOS) 154.5'  
 Ventilated Cap (Y/N) Locking/Expandable Cap

## GROUT

Composition & Proportions Volclay - Equivalent Mix  
 4/5 Bag (50 lbs/bag) w/o-Ben Bentonite Mix  
 Tremled (Y/N) Hole open. w/20 gal. wtr.  
 Interval BGS 3-10.6' bgs.

## CENTRALIZERS (Y/N)

Depth(s) N/A

## SEAL 10.6-14'

Type Enviroplug Medium Bentonite Chips  
 Source Parrott Wolff 3.5  
 Setup/Hydration time 25 min. Vol. Fluid Added ~ 6 gal. wtr  
 Tremled (Y/N)

## FILTER PACK 14-29

Type Morie 20 mesh Silica Sand  
 Amt. Used 13 bags (50 lbs/bag)  
 Tremled (Y/N)  
 Source Parrott Wolff  
 Gr. Size Dist. medium ("fine" medium)

## SCREEN

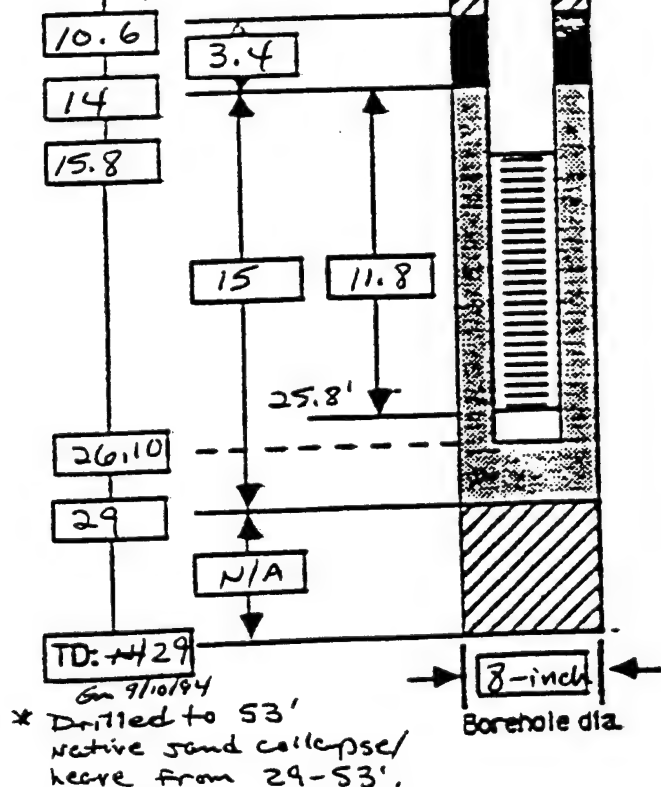
Type Dietrich Schedule 40 PVC w/o-rings  
 Diameter 2-inch  
 Slot Size & Type 0.01-inch slot (machine cut)  
 Interval BGS 15.8-25.8'

## SUMP (Y/N)

Interval BGS see cap Length see cap  
 Bottom Cap (Y/N) 0.3'  
 25.8-26.10' TD

## BACKFILL PLUG

Material N/A  
 Setup/Hydration time N/A  
 Tremled (Y/N) N/A



WELL DEVELOPMENT LOG

Well No.: V3-BG-1

Page 1 of 1

Installation: VTANG

Site: 3

Project No.: 931802-C8 Client/Project: HAZ WRAP

HAZ WRAP Contractor: EARTH TECH Dev. Contractor: Parrott Wolff

Dev. Start (9: 30am) 10/5/94 Dev. End (12: 35m) 10/5/94

Csg Dia.: 2"

Developed by: Ron Bush (Parrott Wolff), Paulo Amado (ET)

Dev. Rig (Y (H))

OVM Reading

on 10/11/94

Dev. Method Surge and Pump

Well Vol. = TD - DTW = 50.30 - 41.39'  $\times$  0.16 gpm (2" casing) = 1.426' Borehole Vol. = 50.30 - 41.39'

1.3 (8" borehole) - 1.426'  $\times$  30 (filter pack porosity) = 3.05' Total Vol. = Well Vol. + Borehole Vol. = 4.50' <sup>gallons</sup>

Equipment <sup>(Whales)</sup> Electric Submersible Pump, <sup>Polyethylene</sup> Tubing and Bailer  
A.B.

Pre-Dev. SWL 41.39' Maximum drawdown during pumping \_\_\_\_\_ ft at \_\_\_\_\_ gpm

Range and Average Discharge rate 0.5 g.p.m. \_\_\_\_\_ gpm

Total quantity of material bailed 39 gallons

Total quantity of water discharged by pumping 35 gallons

Disposition of discharge water \_\_\_\_\_

WDAD = 40.95

Time	Volume Removed (gals)	Water Level ft BTOC	Turbidity	Clarity/Color	Temp °C	pH	Conductivity	Remarks
1155	35	49.3	Slight Turbid	Brown				Electric Submersible Pump
1650								Restart
1758	64		Turbid	Light brown	53.8	7.13	423	Bailer
1813	69		Turbid	Light brown	51.4	7.24	456	
1835	74	49.55	Turbid	Light brown	52.0	7.31	440	

50 gallons added during drilling



Fieldbook 931802-08/10 #4

REV. DATE: MAY 1990

WELL DEVELOPMENT LOG		Well No.: V3-MW-1	Page 1 of 1
Installation: VTANG		Site: 3	
Project No.: 931802-08 Client/Project: HAZWRAP / ANG			
HAZWRAP Contractor: EARTH TECH Dev. Contractor: Parrott Wolff			
Dev. Start (10: 37am) 10/6/94		Dev. End (11: 30am) 10/6/94	
Developed by: Ron Bush (Parrott Wolff), Paulo Amedo (ET)		Csg Dia.: 2" Dev. Rig (Y/N)	

OUM Reading = 63 ppm

WDAO = 19.97 Gm 10/4/94

Dev. Method Surge and Pump

Well Volume = 1.21 Borehole Volume = 2.59 Total Volume 3.80

Equipment <sup>(Whales)</sup> Electric Submersible Pump, <sup>Polyethylene</sup> Teflon Tubing and Bailor  
A.B.Pre-Dev. SWL 18.52 Maximum drawdown during pumping \_\_\_\_\_ ft at \_\_\_\_\_ gpm

Range and Average Discharge rate \_\_\_\_\_ 1 \_\_\_\_\_ gpm

Total quantity of material bailed \_\_\_\_\_ 5 gallons

Total quantity of water discharged by pumping \_\_\_\_\_ 40 gallons

Disposition of discharge water \_\_\_\_\_

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/Color	Temp °C	pH	Conductivity	Remarks
1122	37.0	23.70	—	Clear	54.6	6.79	1130	ODOR
1126	41.0		—	Clear	54.2	6.58	1110	
1130	45.0	25.64	—	Clear	54.0	6.60	1110	

25 gallons add during drilling

WELL DEVELOPMENT LOG		Well No.: V3- Mw-2	Page 1 of 1
Installation: VT ANG		Site: 3	
Project No.: 931802-08		Client/Project: HAZWRAP / ANG	
HAZWRAP Contractor: EARTH TECH		Dev. Contractor: Parrott Wolff	
Dev. Start ( : m) 10/6/94	Dev. End ( : m) 10/6/94	Csg Dia.: 2"	
Developed by: Pavis Amado (EarthTech) / Ron Bush (PW)		Dev. Rig (Y/N):	

GVM Reading = 59.3 ppm \* 2.58' of Product Gm 10/11/94

Dev. Method Surge and Pump / NOT Developed due to  
product per Hazwrap Instruction. Gm 10/11/94.

Equipment <sup>(Wheeler)</sup> Electric Submersible Pump, <sup>Polyethylene</sup> Tefton Tubing and Bailer  
 (N/A - not Developed.)

Pre-Dev. SWL 19.89' BTOC (B. Hedberg) Gm 6/12/95  
 Maximum drawdown during pumping N/A ft at N/A gpm  
 17.20' BTOC Free Product (B. Hedberg) Gm 6/12/95  
 Range and Average Discharge rate N/A gpm

Total quantity of material bailed N/A

Total quantity of water discharged by pumping N/A

Disposition of discharge water Free product at the surface - not purged.  
 Gm 6/12/95 \* Notes from Bill Hedberg (HAZWRAP) - measured Free-Product  
 w/ P. Amado 10/6/94

Time	Volume Removed (gals)	Water Level ft BTOC	Turbidity	Clarity/Color	Temp °C	pH	Conductivity	Remarks
	N/A	23.93 (?) Gm 6/12/95						

Fieldbook 931802-03/10 # 4

REV. DATE: MAY 1990

WELL DEVELOPMENT LOG		Well No.: V3-MW-3	Page 1 of 1
Installation: VTANG		Site: 3	
Project No.: 931802-08		Client/Project: HAZWRAP / ANG	
HAZWRAP Contractor: EARTH TECH		Dev. Contractor: Parrott Wolff	
Dev. Start (8: 38am) 10/6/94	Dev. End (9: 51m) 10/6/94	Csg Dia.: 2"	Dev. Rig (Y (N))
Developed by: Paulo Amedo (Earth Tech) / Ron Bush (Parrott Wolff)			

OVM Reading = 79.0 ppm

WDAO = 18.25' gm 10/11/94

Dev. Method Surge and Pump

Well Volume = 1.01 Borehole Volume = 2.27 Total Volume = 3.28

Equipment (Whales) Electric Submersible Pump, Polyethylene Teflon Tubing and Bailer A.B.

Pre-Dev. SWL 18.40 Maximum drawdown during pumping \_\_\_\_\_ ft at \_\_\_\_\_ gpm

Range and Average Discharge rate 1 g.p.m. \_\_\_\_\_ gpm

Total quantity of material bailed 5 gallons

Total quantity of water discharged by pumping 28 gallons

Disposition of discharge water \_\_\_\_\_

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/Color	Temp °C	pH	Conductivity	Remarks
0943	25.0	23.50	—	Clear	51.2	6.13	897	
0947	29.0		—	Clear	51.5	6.26	903	
0951	33.0	24.37	—	Clear	51.5	6.72	900	

15 gallons add during drilling



## WELL DEVELOPMENT LOG

Well No.: V4-BG-1

Page 1 of 1

Installation: VTAUG

Site: 4

Project No.: 931802-08 Client/Project: HAZWRAP / ANA

HAZWRAP Contractor: EARTH TECH Dev. Contractor: Parrott Wolff

Dev. Start (12:46 PM) 10/5/94 Dev. End (15:31 m) 10/5/94 Csg Dia.: 2"

Developed by: ROW Bush (Parrott Wolff), Paulo Amado (ET) Dev. Rig (Y/N)

OVM Reading = 0 ppm

Gm 10/10/94

Dev. Method Surge and Pump

Well Volume 1.23 Borehole Volume 13.63 Total for 1 Volume 14.86'

Also remove 80 gallons of water add during drilling.

Equipment <sup>(wholesale)</sup> Electric Submersible Pump, <sup>polyethylene</sup> ~~flex~~ tubing and Bailer

Pre-Dev. SWL 21.52 Maximum drawdown during pumping \_\_\_\_\_ ft at \_\_\_\_\_ gpm

Range and Average Discharge rate 1 gpm \_\_\_\_\_ gpm

Total quantity of material bailed 5 gallon

Total quantity of water discharged by pumping 169.5

Disposition of discharge water \_\_\_\_\_

WDAD = 21.25

Time	Volume Removed (gals)	Water Level ft BTOC	Turbidity	Clarity/Color	Temp °C	pH	Conductivity	Remarks
1446	124.50	28.29	—	Clear	53.4	6.54	835	No OOR ↓ ↓
1501	139.50		—	Clear	51.3	6.42	673	
1516	154.50		—	Clear	51.1	6.60	652	
1531	169.50	28.74	—	Clear	50.4	6.59	653	

80 gallons added during drilling

Fieldbook: 931802-08/10 \* 4

REV. DATE: MAY 1990

WELL DEVELOPMENT LOG		Well No.: V4-MW-1	Page 1 of 1
Installation: VTANG		Site: 4	
Project No.: 931802-08		Client/Project: HAZWRAP / AUG	
HAZWRAP Contractor: EARTH TECH		Dev. Contractor: Parrott Wolff	
Dev. Start (13: 02 m) 10/6/94	Dev. End (13: 36 m) 10/6/94	Csd Dia.: 2"	Dev. Rig (Y/N)
Developed by: Ron Bush (Parrott Wolff)		Paulo Amado (ET)	

OVH Reading = 55.0 ppm

WDAD = 17.10'

From 10/11/94

Dev. Method Surge and Pump

Well Volume = 1.13 Borehole Volume 2.42 Total Volume = 3.55

Equipment (whales) Electric Submersible Pump, <sup>Polyethylene</sup> Teflon Tubing and Bailer

Pre-Dev. SWL 17.60 Maximum drawdown during pumping \_\_\_\_\_ ft at \_\_\_\_\_ gpm

Range and Average Discharge rate 1 gpm \_\_\_\_\_ gpm

Total quantity of material bailed 10 gallons

Total quantity of water discharged by pumping 29 gallons

Disposition of discharge water \_\_\_\_\_

Time	Volume Removed (gals)	Water Level ft BTOC	Turbidity	Clarity/Color	Temp °C	pH	Conductivity	Remarks
1327	21.0	23.34	—	Clear	55.8	6.63	1600	ODOR / Sheen
1332	25.0		—	Clear	55.4	6.68	1560	
1336	29.0	24.26	—	Clear	53.7	6.68	1540	

10 gallons add during drilling

## WELL DEVELOPMENT LOG

Well No.: V4 - HW - 2

Page 1 of 1

Installation: VTANG

Site: 4

Project No.: 931802-08 Client/Project: HAZWRAP / ANG

HAZWRAP Contractor: EARTH TECH Dev. Contractor: Parrott Wolf

Dev. Start (15: 1.5 m) 10/6/94 Dev. End (15: 2.1 m) 10/6/94

Csd Dia.: 2"

Developed by: Ron Bush (Parrott Wolf), Paulo Amado (ET) Dev. Rig (Y/NY)

OVM Reading = 84.0 ppm

WDAD = 19.70' Gr 10/11/94

Dev. Method Surge and Pump

Well Volume = 1.11 Borehole Volume = 3.56 Total Volume = 4.68

Equipment <sup>(Wholes)</sup> Electric Submersible Pump, <sup>Polyethylene</sup> ~~Teflon~~ Tubing and Bailer  
H.B.Pre-Dev. SWL 19.01 Maximum drawdown during pumping \_\_\_\_\_ ft at \_\_\_\_\_ gpmRange and Average Discharge rate 1 gpm. \_\_\_\_\_ gpmTotal quantity of material bailed 5 gallonsTotal quantity of water discharged by pumping 44 gpm 44 gallons

Disposition of discharge water \_\_\_\_\_

Time	Volume Removed (gals)	Water Level ft BTOC	Turbidity	Clarity/Color	Temp °C	pH	Conductivity	Remarks
1511	39.0	25.48	—	Clear	54.4	6.48	773	
1516	44.0		—	—	53.7	6.31	764	
1521	49.0	25.53	—	—	53.2	6.26	768	

25 gallons add during drilling

WELL DEVELOPMENT LOG		Well No.: V4-HW-3	Page 1 of 1
Installation: VTANG		Site: 4	
Project No.: 931802-08		Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EARTH TECH		Dev. Contractor: Parrott Wolff	
Dev. Start (14:00 m) 10/6/94	Dev. End (16:35 m) 10/6/94	Csq Dia.: 2"	Dev. Rig (Y/N)
Developed by: RON Bush (Parrott Wolff) & Paulo Amado (ET)			Dev. Rig (Y/N)

OVH Reading = 0 ppm

6m 10/6/94

Dev. Method Surge and Pump

Well Volume = 1.07 Borehole Volume = 3.42 Total for 1 Volume = 4.49

Equipment <sup>(Whales)</sup> Electric Submersible Pump, <sup>Polyethylene</sup> ~~Felton~~ <sup>H.B.</sup> Tubing and BailerPre-Dev. SWL 19.42 Maximum drawdown during pumping \_\_\_\_\_ ft at \_\_\_\_\_ gpmRange and Average Discharge rate 1 g.p.m. \_\_\_\_\_ gpmTotal quantity of material bailed 5 gallonsTotal quantity of water discharged by pumping 124

Disposition of discharge water \_\_\_\_\_

WOAD = 18.95

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/Color	Temp °C	pH	Conductivity	Remarks
1620	114	25.83	—	Clear	51.4	7.21	2390	NO ODOOR
1625	119		—	Clear	51.3	7.34	1790	↓ ↓
1630	124		—	Clear	51.2	7.32	1710	
1635	129	25.83	—	Clear	51.0	7.33	1710	

100 gallons added during drilling

WELL NO.: V3-BG

Site: 3 Dr. Samp / AST area

Project No.:

FAZWRAP Contractor: EARTH ECH  
Purge Start: (Date) 10/23/93 (Time) 1630 Purge End: (Date) 10/23/94 (Time) 1710

Depth Measurement Ref. Point\* TOC 2" PVC Well Csg ID: 2" 4" 6" Other 12"

L NAPL Check (Y) (N) ~~(N)~~ DNAPL Check (Y) (N) ~~(N)~~  
10/23/84

Equipment Used To Measure Thickness and Sample Free Product (Milk, Yogurt, etc.)  
ORS Interface probe SN 06-02228 (PID no 1068013)  
shut down 0.25' 11:2 11:3

Depth to Top and Bottom of Screen Interval 40.3 - 50.3' bgs

Depth to LNAPL: NA (none)

Depth to DNPL: NA Orig. DTW: 41.59 Final DTW: 43.32

LNAPL/DNAPL Thickness: NA LNAPL/DNAPL Sample and Volume: NA

Measured Well TD: 49.65

( - ) Orig. DTW: 41.59

2. Filter pack in 8-inch Borehole  
holds 5.8 gal (est. 30% porosity).  
Begin parameters! on casing volume after 5.8 gal

(=) Wtr Col. Thick.: 8.06 (x)  $\frac{\text{Gals/ft} (=)}{1.3} \text{ Gals/Csg Vol. (x)} = \underline{3.9}$  Csg Vol. (=) 3.9

Purge Method: Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ Teflon ☐ Centrifugal Pump ☐  
PVC ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other \_\_\_\_\_

Purging Equipment (Make, Model, etc.) \_\_\_\_\_ Purge Equipment Decon'd? (Y) / (N)

Purging Equipment (Make, Model, etc.) \_\_\_\_\_ Purge Equipment \_\_\_\_\_  
 Decontaminated by: ① Potable water w/ Liquinox wash, ② potable rinse, ③ DI Rinse, ④ methanol rinse  
 S/Air Ann 1/1

Purge Wtr Containerized? (Y/N) N/A Avg Purge Rate: N/A gpm

Purge Wtr Containerized? (Y/N) Y Avge Purge Rate: 1.2 gpm  
Weather: ~60°F cool breeze / partly sunny (60+°F)

[illegible]

\* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)  
DTW = Depth To Water    LNAPL/DNAPL = Light or Dense Non-Aqueous Phase Liquid

Depth Measurement Ref. Point: \_\_\_\_\_  
Well Hdspace/Odor: 473 ppm / odor (HC) LNAPL Check (Y/N) DNAPL Check (Y/N)  
Sample From Product (Make, Model, etc) \_\_\_\_\_

ORS  $\sigma_1$ /wtr probe SN 1906

ORS 51/wtr probe SN 1906  
Depth to Top and Bottom of Screen interval: 15.8 - 25.8' bgs  
15.48 - 25.48' bgs  
Stickdown ~ 0.52'  
Depth to LNAPL: N/A  
Depth to DNPL: N/A Orig. DTW: Final DTW: N/A

Depth to LNAPL: N/A Depth to DNPL: N/A Orig. DTW: \_\_\_\_\_ Final DTW: \_\_\_\_\_  
LNAPL/DNAPL Thickness: N/A LNAPL/DNAPL Sample and Volume: N/A  
Measured Well TD: 25.7  
(-) Orig. DTW: 18.81'  
\* Filter pack volume = 5 gal (at 30% porosity)

\* Filter pack volume = 5 gal (at 30% porosity)

(=) Wtr Col. Thick.: 6.89 (x)  $\frac{2^* - 0.16}{4^* - 0.65}$  Gals/ft (=) 1.1 Gals/Csg Vol. (x)  $\frac{2}{3}$  Csg Vol. (=)  $\frac{3.3}{5.0}$  Total Purge Gals. 8.3 Total min. purge

Purge Method: Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailers ☒ ☐ SS ☐ Ter ☒ Centrifugal Pump ☐ PVC ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other \_\_\_\_\_  
Purging Equipment (Make, Model, etc.) Teflon Baiter Purge Equipment Decon'd? Y/N  
polypropylene cord per SAT August 1991

Purge Wtr Containerized? (Y/N) Avg Purge Rate: \_\_\_\_\_ gpm (°F)  
Weather: \_\_\_\_\_

[illegible]

\* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)  
DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqueous Phase Liquid

X All parameters within 10% for (3) consecutive casing volumes. See GW sampling log 10/31/94.

Fieldbook: 931802-08/10 BK\*5 Sample ID No.: V3-MW3-1094

MONITORING WELL PURGING LOG WELL NO.: V3-MW3

Installation: VTANC Site: Site 3

HAZWRAP Contractor: Earth Tech Project No.: 931802-08

Purge Start: (Date) 10/31/94 (Time) 1435 Purge End: (Date) 10/31/94 (Time) 1459

Purged by: G. Mayner

Depth Measurement Ref. Point\*: TOC Well Csg ID: 2" 4" 6" Other:

Well Hdspace/Odor: 398 ppm / HC odor on probe LNAPL Check (Y/N) DNAPL Check (Y/N)

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc)

ORS oil/wtr Interface Probe SN 1906

Depth to Top and Bottom of Screen Interval: 14.47-24.67 bgs  
 Depth to LNAPL: N/A (NONE) Depth to DNAPL: N/A Orig. DTW: 18.48' Final DTW: 24.34' BTOC  
 W ~ 0.33' thick down

LNAPL/DNAPL Thickness: N/A LNAPL/DNAPL Sample and Volume: N/A  
 Measured Well TD: 24.43' BTOC  
 (-) Orig. DTW: 18.48' BTOC

(=) Wtr Col. Thick.: 5.95 (x) 2" 0.16 4" 0.65 6" 1.47 8" 2.6 Gals/ft (=) 0.95 Gals/Csg Vol. (x) 3 Csg Vol. (=) 2.85 Total Purge + 4.3 Gals. 7.3 Total min. purge

Purge Method:  
 Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailor ☒ SS ☐ Tef ☒ Centrifugal Pump ☐ PVC ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other:

Purging Equipment (Make, Model, etc.) Teflon Bailor Purge Equipment Decon'd? (Y/N)  
 w/ polypropylene cord per SAP (August 1994)

Purge Wtr Containerized? (Y/N) Avg. Purge Rate: 0.28 gpm  
 Weather: overcast, 55°F, Sli. breeze (SS of)

Actual Time	Elapsed Time	Vol. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake (ft)	Temp (°C)	pH (s.a)	Cond. (umhos/m)	Turbidity (NTa)	Other	Comment
1435	0	0.25	18.48	N/A	11.9	7.07	1794	NONE	V. Sli. tint	HC odor
1446	11	4.5	N/A	"	10.9	6.96	1797	V. turbid	olive brn.	HC odor
1451	16	5.5	"	"	10.9	6.99	1766	"	"	"
1455	20	6.5	"	"	10.9	6.99	1748	"	"	tr. sheen
1459	24	7.5	"	"	10.8	6.97	1789	"	"	"
1500	25	N/A	20.1' rising	N/A	N/A	N/A	N/A	N/A	N/A	
1505										
1530		~9.5	18.69	N/A						

INITIAL  
 Bailor  
 Filter pack  
 volume  
 1st casing  
 volume  
 2nd "  
 3rd "

\* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)  
 DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqueous Phase Liquid

\* All parameters within 10% for (3) consecutive casing volumes. See GW sampling Log 10/31/94.

End  
 purge  
 begin  
 sample  
 end  
 sample



REV. DATE: MAY 1990

MONITORING WELL PURGING LOG		Sample ID No.: V4-BG1-01
Installation: VTANG		WELL NO.: V4-BG1
HAZWRAP Contractor: Earth Tech		Site: 4 Drainage Ditch
Purge Start: (Date) 10/23/94 (Time) 1740		Project No.:
Purge End: (Date) 10/23/94 (Time) 1812		
Purged by: PH Lay - GM & Bailer		

Depth Measurement Ref. Point\* TOC 2" PVC Well Csg ID: (2") 4" 6" Other

Well Hdspace/Odor: none LNAPL Check (Y/N) DNAPL Check (Y/N)

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc)

ORS Interface Probe sn 06-02228 (PID, no. 1068013)

Depth to Top and Bottom of Screen interval 19.14 29.14' DGS

Depth to DNPL: NA Orig. DTW: 21.69 Final DTW: 24.01

Depth to LNAPL: none

LNAPL/DNAPL Thickness NA LNAPL/DNAPL Sample and Volume: NA

Measured Well TD: 28.8

(-) Orig. DTW: 21.69

(=) Wtr Col. Thick.: 7.11 (x) (2") - 0.16  
4" - 0.65 Gals/ft (=) 1.14 Gals/Csg Vol. (x) (3) 4 Csg Vol. (=) 3.42 Purge Gals.  
6" - 1.47

\* filter pack in 8-inch Borehole  
 = 5.2 gallons at 30% porosity  
 begin parameters on casing volume after  
 5.2 gallons

Purge Method: ☐ Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ Tef ☐ PVC ☒ Centrifugal Pump ☐ Other

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other

Purging Equipment (Make, Model, etc.) Purge Equipment Decon'd? (Y/N)

① Potable water liquid wash ② Potable rinse ③ DI Rinse ④ Methanol Rinse ⑤ Airdry

Purge Wtr Containerized? (Y/N) Avge Purge Rate: 1500 gpm  
 Weather: Cool Cloudy - cooling down - sunset 1815 (60 °F)

Actual Time	Elapsed Time	Vol. purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake (ft)	Temp (°C)	pH (s.a)	Conc. (mg/L)	Turbidity (NTU)	Other	Comment
1740	0	0.5	21.69	N/A	11.7	7.16	772	N/A		no odor
1750	10	5.2	-	N/A	-	-	-	N/A		cloudy/turbid
1752	12	6.3	-	N/A	10.8	7.44	708	N/A		cloudy/turbid
1754	14	7.5	-	N/A	10.7	7.31	1141	N/A		cloudy olive brown
1756	16	8.75	-	N/A	10.5	7.31	1015	N/A		turbid - olive brown
1758	18	10	-	N/A	10.5	7.30	1142	N/A		" "
1800	20	11	-	N/A	10.8	7.36	1020	N/A		" "
1805	25	12.25	-	N/A	10.6	7.30	1172	N/A		" "
1808	28	13.5	-	N/A	10.5	7.28	1198	N/A		" "
1812	32	15	-	N/A	10.5	7.28	1197	N/A		" "
END	-	-	24.01	-	-	-	-	-	-	-

\* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)  
 DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqueous Phase Liquid

Initial Sand pack volume  
 1 well vol.  
 2 well vol.  
 3 well vol.  
 4 well vol.  
 5 well vol.  
 6 well vol.  
 7 well vol.  
 8 well vol.



Fieldbook 931802-08/10 BK#5

Sample ID No.: V4-BG1-1094

WELL NO.: V4-BG1

## MONITORING WELL PURGING LOG

Installation: VTANG

Site: Site 4

HAZWRAP Contractor: Earth Tech

Project No.: 931802-08

Purge Start: (Date) 10/25/94 (Time) 1831

Purge End: (Date) 10/25/94 (Time) 1910

Purged by: G. Maynor

Depth Measurement Ref. Point\* TOC 2" PVC Well Csg ID: 2" 4" 6" Other \_\_\_\_\_Well Hdspace/Odor: 0 ppm OVM LNAPL Check (Y) N DNAPL Check (Y) N

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc)

HAZCO Interface Meter Model 121 SN #2800 (malfunctioned)ORS Interface Probe HAZCO SN 1906Depth to Top and Bottom of Screen Interval 19.14-29.14' bgsDepth to LNAPL: N/ADepth to DNPL: N/A Orig. DTW: 21.77' Final DTW: 21.80'LNAPL/DNAPL Thickness: N/A LNAPL/DNAPL Sample and Volume: N/AMeasured Well TD: 28.8'(-) Orig. DTW: 21.77'\* Filter Pack in 8-inch borehole  
= 5.2 gallons, assuming ~30%  
porosity. This volume will be  
removed initially.

(=) Wtr Col. Thick.: 7.03 (x) 2" - 0.16  
4" - 0.65 Gals/ft (=) 1.12 Gals/Csg Vol. (x) 3 Csg Vol. (=) 3.37 Total  
6" - 1.47 4 + 5.20 Purge  
8" - 2.6 5 8.57 gal

Purge Method:

Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailor ☒SS ☐ Tef ☒ Centrifugal Pump ☐  
PVC ☐Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐

Other \_\_\_\_\_

Purging Equipment (Make, Model, etc.) Teflon Bailor Purge Equipment Decon'd? (Y) Nw/ polypropylene cordSee fieldbook #5  
and #4. and  
SAP (August 1990)Purge Wtr Containerized? (Y) N Avg. Purge Rate: 0.302 gpm  
Weather: partly cloudy, dusk to dark, no breeze (50 °F)

Actual Time	Elapsed Time	Vol. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake (ft)	Temp (°C)	pH (s.a)	Cond. (umhos/m)	Turbidity (NTa)	Other	Comment
1831	N/A	0.25	21.77	N/A	6.6	6.78	434	St. turb	LT Gray LTBEN.	cloudy
1847	16	5.2	N/A	N/A	10.1	6.99	828	"	LT BEN	"
1852	21	6.3	N/A	N/A	10.1	7.07	805	"	"	"
1855	24	7.4	"	"	10.1	7.07	847	"	"	"
1859	28	8.5	"	"	10.1	7.04	992	"	"	"
1902	31	9.6	"	"	10.1	7.12	856	"	"	"
1906	35	10.7	"	"	10.1	7.09	863	"	"	"
1910	39	11.8	N/A	N/A	10.1	7.06	940	"	"	"
1913	42	N/A	N/A							sample
1945	74	~14	21.8							end sample

Filter pack volume  
↓  
1st casing vol.  
2nd "  
3rd "  
4th "  
5th "  
6th "  
BESIN Sampling

\* All Depths in Feet Below Ref. Point on wellhead - generally Top of Casing (TOC)

DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqueous Phase Liquid

\* All parameters within 10% for three consecutive casing volumes. See Sampling Log 10/25/94.

REV. DATE: MAY 1990

Fieldbook: 931802-08/10 BK \*S

Sample ID No.: V4-MW2-1044 (MS/MSD)  
V4-MW2-1094 (QA/QC)

## MONITORING WELL PURGING LOG

Installation: VTANG

WELL NO.: V4 - MW2

Site: Site 4

HAZWRAP Contractor: Earth Tech

Project No.: 931802-08

Purge Start: (Date) 10/27/94 (Time) 1616

Purge End: (Date) 10/27/94 (Time) 1644

Purged by: G. Maynor

Depth Measurement Ref. Point\*: TOC Well Csg ID: (2") 4" 6" Other: \_\_\_\_\_

Well Hdspace/Odor: 49 ppm/none

LNAPL Check (Y/N) DNAPL Check (Y/N)

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc.)

ORS oil/wtr. Interface Probe HAZCO SN 1906

Depth to Top and Bottom of Screen Interval: 15.67 - 25.66' BTO  
15.35 - 25.34' BTO

Depth to LNAPL: N/A

Depth to DNAPL: N/A Orig. DTW: 19.37' Final DTW: 19.39'

LNAPL/DNAPL Thickness: N/A

Sample and Volume: N/A

Measured Well TD: 25.6' BTOC

\* Filter Pack in 8-inch Borehole  
over 6.23' wtr. column in  
casing holds approx 4.6 gal (30%  
min. purge)

(-) Orig. DTW: 19.37' BTOC

(=) Wtr Col. Thick.: 6.23' (x) 2" - 0.16  
4" - 0.65  
6" - 1.47  
8" - 2.6Gals/ft (=) 1.0 Gals/Csg Vol. (x) 3 Csg Vol. (=) 3.0  
+ 4.6 Total Purge Gals. 7.6 Total min. purge

Purge Method:

Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐  
Tef ☒ Centrifugal Pump ☐  
PVC ☐Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other: \_\_\_\_\_

Purging Equipment (Make, Model, etc.) Teflon bailer Purge Equipment Decon'd? (Y/N)

w/ polypropylene cord

Purge Wtr Containerized? (Y/N) Avg Purge Rate: \_\_\_\_\_ gpm  
Weather: overcast, sli breeze (53 °F)

Actual Time	Elapsed Time	Volts. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake (ft)	Temp (°C)	pH (s.a)	Cond. (umhos/m)	Turbidity (NTa)	Other	Comment
1616	0	0.25	19.37	N/A	11.3	6.69	991	NONE	odor	Hydrocarbon odor
1627	11	5.0	N/A	N/A	10.7	6.8	1449	Sl. Turbid	Lt. Brn. cloudy	HC odor
1633	17	6.0	N/A	N/A	10.8	6.8	1337	"	"	"
1639	23	7.0	N/A	N/A	10.7	6.81	1447	Lt. Brn. Tint	Less Turbid	HC odor
1644	28	8.0	N/A	N/A	10.8	6.79	1348	"	"	"
1645	29	N/A	19.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1648	32	N/A	N/A	"	"	"	"	"	"	* sheen visible on purge wtr
1810	114	14+	19.39	"	"	"	"	"	"	"

Begin

Filter pack volume  
1st casing volume  
2nd "  
3rd "

End purge

Begin Sample  
End Sample\* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)  
DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqueous Phase Liquid

\* All parameters within 10% for (3) consecutive casing volumes - see sampling log 10/26/94.

Fieldbook: 931802-08/10 #5

Sample ID No.: V4-MW3-1094

## MONITORING WELL PURGING LOG

WELL NO.: V4-MW3

Installation: VTANG

Site: Site 4

HAZWRAP Contractor: EarthTech

Project No.: 931802-08

Purge Start: (Date) 10/26/94 (Time) 1724

Purge End: (Date) 10/26/94 (Time) 1747

Purged by: G. Mayner

Depth Measurement Ref. Point\* TOC Well Csg ID: (2") 4" 6" Other \_\_\_\_\_Well Hdspace/Odor: Open/NONE LNAPL Check (Y/N) DNAPL Check (Y/N)

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc.)

ORS oil/wtr Interface Probe Hazco SN 1906Depth to Top and Bottom of Screen Interval: 15.8-25.8' BTOC  
15.45-25.45' BTOCDepth to LNAPL: N/ADepth to DNPL: N/A Orig. DTW: 19.57' Final DTW: 19.57' BTOCLNAPL/DNAPL Thickness N/A LNAPL/DNAPL Sample and Volume: N/AMeasured Well TD: 25.8' BTOC(-) Orig. DTW: 19.57\* Filter pack in 8-inch Borehole  
over 6.23' wtr column in casing  
= 4.6 gal

(=) Wtr Col. Thick.: 6.23 (x) (2") 0.16  
4" - 0.65 Gals/ft (=) 1.0 Gals/Csg Vol. (x) (3) Csg Vol. (=) 3.0 Total  
6" - 1.47 4 + 4.6 Purge  
8" - 2.6 5 7.6 gal Gals. Total

Purge Method:

 Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ ☐ Tef ☒ Centrifugal Pump ☐  
 PVC ☐
Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other \_\_\_\_\_Purging Equipment (Make, Model, etc.) Taflon Bailer Purge Equipment Decon'd? (Y/N)w/ polypropylene cord see SAP August 199Purge Wtr Containerized? (Y/N) Avg Purge Rate: 0.35 gpmWeather: partly cloudy, ~50°F, trace breeze (50°F)

Actual Time	Elapsed Time	Volts. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake (ft)	Temp (°C)	pH (s.a)	Cond. (umhos/cm)	Turbidity (NTa)	Other	Comment
1724	0	0.25	19.57	N/A	10.9	7.47	4.42	Very low	V. slightly cloudy	Fairly clear wtr.
1735	11	5.0	N/A	N/A	10.7	7.40	4.47	Turbid	LT. brown	V. cloudy
1739	15	6.0	"	"	10.7	7.49	4.75	"	"	"
1743	19	7.0	"	"	10.8	7.54	4.71	"	"	"
1747	23	8.0	"	"	10.8	7.53	4.71	"	"	"
1750	26	↓	"	"	N/A	N/A	N/A	"	"	"
1816	52	10±	19.57	"	N/A	N/A	N/A	"	"	"

 Begin  
 Filter  
 pack volum  
 1st casing  
 2nd "  
 3rd  
 Begin  
 Sample  
 End Samp
End  
purge:
 \* All Depths in Feet Below Ref. Point on wellhead - generally Top of Casing (TOC)  
 DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqueous Phase Liquid

 \* All parameters within 10% for (3) consecutive  
 casing volumes. See Sampling Log 10/26/94.

REV. DATE: MAY 1990

## MONITORING WELL SAMPLING LOG

Installation: VTANG

Sample ID No.: V3-BG1-1094+(D)

WELL NO.: V3-BG1

Site: Site 3

Project No. 931802-08

HAZWRAP Contractor: Earth Tech

Sample End: (Date) 10/24/94 (Time) 1425

Sample Start: (Date) 10/24/94 (Time) 135

Sampled by: Patrick H. Lay

Orig. SWL: 41.62 ft BTOC\* Final SWL: 41.76 ft. BTOC

Screen Interval: 40.3 - 50.3 ft BTOC

Temp	pH	Cond.	Turbidity
12.8	7.89	838	Clear

Are parameters 20%  
of purge values? (Y) N

Repurge Y (N)

No. repurge volumes: N/A

Sampling Method:

Submersible Pump ☐Dedicated Bladder Pump ☐Bladder Pump ☐Bailer ☒SS ☐Tef ☒PVC ☐Centrifugal Pump ☐Peristaltic Pump ☐Hand Pump ☐Gas Lift/ Displacement Pump ☐

Other \_\_\_\_\_

Sampling Equipment (Make, Model, etc.) N/A

Sample Equipment Decon'd? (Y) N ① Potable water w/ Lignox wash ② Potable rinse ③ DI rinse  
④ methanol rinse ⑤ Air dry

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: Pretty day Sunny breezy (65 °F)

Lab Analyses: (Circle)

VOA

SVOA

METALS

PEST/PCBS

TPH

CATIONS

ANIONS

TDS

8/1/92  
Others: 10/92

Metals: (Circle) Filtered

Unfiltered

Both

Field Dups.: (Y) N

Referee Dups.: Y (N)

Comments:

Collect Rinseate for sample QA/QC (ER-102494-1)  
 Sample time on label (1315) when sampling first began  
 - Sampled VOCs (1st) then TPH (w/ HCL), TPH w/ w/ pres,  
 SVOCS, unfiltered metals, then filtered metals  
 placed on ice packs <sup>PHC</sup> All bottles labeled.

\*BTOC = Below Top of Casing (or other measurement reference point)  
 SWL = Static Water Level

REV. DATE: MAY 1990

Fieldbook: 931802-08/10, BK #5

## MONITORING WELL SAMPLING LOG

Installation: VTANG

HAZWRAP Contractor: Earth Tech

Sample Start: (Date) 10/31/94 (Time) 1641

Sampled by: G. Maynor

Sample ID No.: V3-mw1-1094

WELL NO.: V3-mw1

Site: Site 3

Project No.: 931802-08

Sample End: (Date) 10/31/94 (Time) 1656

Orig. SWL: 18.81 ft BTOC\* Final SWL: 18.89 ft. BTOC

Screen Interval: 15.48 - 25.48 ft BTOC

Temp	pH	Cond.	Turbidity
11.8	7.08	2.24 mS/cm	Turbid mS/cm oure Brn

Hc odor

Are parameters 20%  
of purge values? (Y)N

Repurge Y/(N)

No. repurge volumes: N/A

Sampling Method:

Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailor ☒SS ☐  
Tef ☒  
PVC ☐Centrifugal Pump ☐Peristaltic Pump ☐ Hand Pump ☐Gas Lift/ Displacement Pump ☐

Other

Sampling Equipment (Make, Model, etc.)

Teflon bailer w/ teflon check  
valve for VOCs and filter attachments for metals

Sample Equipment Decon'd? (Y)N per SAP (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: overcast @ light rain (-55 °F)

Lab Analyses: (Circle)

VOA

SVOA

METALS

PEST/PCBS

TPH

CATIONS

ANIONS

TDS

8010/8020 CLP 10/92

TAL

8015

Others:

Metals: (Circle) Filtered

Unfiltered

Both

Field Dups.: Y(N)

Referee Dups.: Y(N)

Comments:

\*BTOC = Below Top of Casing (or other measurement reference point)  
SWL = Static Water Level

REV. DATE: MAY 1990

Fieldbook: 931802-08/10, BK # 5

Sample ID No.: V3-MW3-1094

WELL NO.: V3-MW3

## MONITORING WELL SAMPLING LOG

Installation: VTANG

Site: Site 3

HAZWRAP Contractor: Earth Tech

Project No.: 931802-08

Sample Start: (Date) 10/31/94 (Time) 1505

Sample End: (Date) 10/31/94 (Time) 1530

Sampled by: G. Mayner

Orig. SWL: 20.1 ft BTOC\* Final SWL: 18.69 ft. BTOC  
 Screen Interval: 14.34 - 24.34 ft BTOC

μS/cm

Temp	pH	Cond.	Turbidity
10.8	6.97	1789	Turbid olive brn

H<sub>2</sub> odor fr. screen?

Are parameters 20% of purge values? (Y) N

Repurge Y (N)

No. repurge volumes: N/A

Sampling Method:

Submersible Pump ☐Dedicated Bladder Pump ☐Bladder Pump ☐Bailer ☒SS ☐Tef ☒PVC ☐Centrifugal Pump ☐Peristaltic Pump ☐ Hand Pump ☐Gas Lift/ Displacement Pump ☐

Other \_\_\_\_\_

Sampling Equipment (Make, Model, etc.)

Teflon bailer w/ teflon check valve for VOCs and attachments for filtered metals

Sample Equipment Decon'd? (Y) N per SAP (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOCWeather: overcast, sli. breeze (55 °F)

Lab Analyses: (Circle)

VOA

SVOA

METALS

PEST/PCBS

TPH

CATIONS

ANIONS

TDS

Others: 8014/8020 CLP 1/92 TAL

8015

Metals: (Circle) Filtered

Unfiltered

Both

Field Dups.: Y (N)

Referee Dups.: Y (N)

Comments:

\*BTOC = Below Top of Casing (or other measurement reference point)  
 SWL = Static Water Level

Sample ID No.:

WELL NO.: V4-BG-1

Site: Site 4

Project No.: 931802-08

## MONITORING WELL SAMPLING LOG

Installation: VTANG

HAZWRAP Contractor: Earth Tech

Sample Start: (Date) 10/24/94 (Time) 1200

Sample End: (Date) 10/24/94 (Time)

Sampled by: Greg Monnor

Orig. SWL: 21.71 ft BTOC\* Final SWL: \_\_\_\_\_ ft BTOC

Screen Interval: 19.4 - 29.14 ft BTOC

Temp	pH	Cond.	Turbidity	pH	Cond.	Temp
11.7	7.03	590	sl. gray	7.44	761	10.6
10.7	7.24	753	"			
10.6	7.33	690	sl. - lt. brn.			
10.4	7.35	787	"			
10.4	7.35	789				

Are parameters 20%  
of purge values? Y / N

Repurge Y / N

No. repurge volumes: \_\_\_\_\_

Sampling Method:

Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐Tef ☒ Centrifugal Pump ☐PVC ☐Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other \_\_\_\_\_

Sampling Equipment (Make, Model, etc.) N/A

Sample Equipment Decon'd? (Y) N

- ① Alconox/potable wtr wash  
② potable wtr. rinse  
③ Deionized wtr rinse (lot # 4189)  
④ methanol Rinse  
⑤ AIR Dry

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: Partly sunny/sunny, lt. breeze (65 ± °F)

Lab Analyses: (Circle)

VOA ☒ SVOA ☒ METALS ☒ PEST/PCBS ☐ TPH ☒ CATIONS ☐ ANIONS ☐ TDS ☐

Others: 2000/8420 CLP 10/92 CLP

Metals: (Circle) Filtered ☐ Unfiltered ☐ Both ☒

Field Dups.: Y (N) Referee Dups.: Y (N)

Comments:

\*Due to unstable parameters - will  
repurge and sample. See 10/25/94  
log 5. Gm 10/24/94

\*BTOC = Below Top of Casing (or other measurement reference point)  
SWL = Static Water Level



REV. DATE: MAY 1990

Fieldbook 931802-08/10

MONITORING WELL SAMPLING LOG	Sample ID No.: V4-BG-1094
Installation: VTANG	WELL NO.: V4-BG-1
HAZWRAP Contractor: Earth Tech	Site: Site 4
Sample Start: (Date) 10/25/94 (Time) 1913	Project No.: 931802-08
Sampled by: G. Mayner	Sample End: (Date) 10/25/94 (Time) 1945

Orig. SWL: 21.77 ft BTOC\* Final SWL: 21.8 ft. BTOC  
 Screen Interval: 19.4 - 29.4 ft BTOC GS (Approx. 18.9 - 28.9 BTOC).

Temp	pH	Cond.	Turbidity
10.1	7.06		Slight, LT. Brn - cloudy

Are parameters 20% of purge values? (Y/N)

Repurge Y (N)

No. repurge volumes: N/A

Sampling Method:

Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ Centrifugal Pump ☐ PVC ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other \_\_\_\_\_

Sampling Equipment (Make, Model, etc.) w/ polypropylene cord (dedicated)  
 w/ Teflon bailer and teflon check valve for VOCs and attachment for 45 micron filters for metals.

Sample Equipment Decon'd? (Y/N) per SAT (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: partly cloudy, dusk to dark, no breeze (50 °F)

Lab Analyses: (Circle)

VOA

SVOA

METALS

PEST/PCBS

TPH  
801's

CATIONS

ANIONS

TDS

Others: 8010/8020 CLP 10/92 TAL CLP Total + Dissolved

Metals: (Circle) Filtered Unfiltered Both

Field Dups.: Y (N) Referee Dups.: Y (N)

Comments:

Held samples with TB-102594-1 until 10/26/94  
 Shipment to Lab via Fed Ex (closed 2000 10/25/94).  
 Gm 10/25/94

\*BTOC = Below Top of Casing (or other measurement reference point)  
 SWL = Static Water Level



REV. DATE: MAY 1990

BKAS

Fieldbook: 931802-08/10

Sample ID No.: V4-MW2-10944QA/QC

## MONITORING WELL SAMPLING LOG

WELL NO.: V4-MW2-10944

Site: Site 4

Installation: VTANG

Project No.: 931802-08

HAZWRAP Contractor: Earth Tech

Sample Start: (Date) 10/27/94 (Time) 1648

Sample End: (Date) 10/27/94 (Time) 1810

Sampled by: G. Mayner

Orig. SWL: 19.39 ft BTOC\* Final SWL: 19.39' ft. BTOC

Screen Interval: 15.35 - 25.34 ft BTOC

Temp	pH	Cond.	Turbidity
10.8	6.79	1348	4.511 LT. Bm. Jnt

4C odor

Are parameters 20%  
of purge values? (Y/N)

Repurge Y (N)

No. repurge volumes: N/A

Sampling Method:

Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailor ☒ SS ☐  
Tef ☒ Centrifugal Pump ☐  
PVC ☐Peristaltic Pump ☐ Hand Pump ☐Gas Lift/ Displacement Pump ☐

Other

Sampling Equipment (Make, Model, etc.)

Teflon bailer w/ teflon check valve  
for volatiles and filter attachments for metals.

Sample Equipment Decon'd? (Y/N) per SAP (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: overcast, slt. breeze (53 °F)

Lab Analyses: (Circle)

VOA

SVOA

METALS

PEST/PCBS

TPH

CATIONS

ANIONS

TDS

8010/8020 CLP 10/92 TAL

8015

Others:

Metals: (Circle) Filtered Unfiltered

Both

Field Dups.: Y (N)

Referee Dups.: (Y/N)

MS/MSD - QA/QC

Split 4 VT HMM

Comments:

- Extra volume for MS/MSD - noted as "QA/QC".
- Split volumes/sample for VT HMM.

\*BTOC = Below Top of Casing (or other measurement reference point)  
SWL = Static Water Level

REV. DATE: MAY 1990

Fieldbook : 931802-08/10 BK#5

Sample ID No.: V4-MW3-1094

WELL NO.: V4-MW3

MONITORING WELL SAMPLING LOG

Installation: VTANG

Site: Site 4

HAZWRAP Contractor: Earth Tech

Project No.: 931802-08

Sample Start: (Date) 10/26/94 (Time) 1750

Sample End: (Date) 10/26/94 (Time) 1816

Sampled by: G. Maynor

Orig. SWL: 19.57 ft BTOC\* Final SWL: 19.57 ft BTOC

Screen Interval: 15.45 - 25.45 ft BTOC

Temp	pH	Cond.	Turbidity
10.8	7.53	4.71 mS/cm	5.1 Turbid lt. brn. cloudy

End purge parameters

Are parameters 20% of purge values? (Y/N)

Repurge Y/(N)

No. repurge volumes: N/A

Sampling Method:

Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☒ Bailer ☐ SS ☐ Tef ☒ Centrifugal Pump ☐ PVC ☐

Peristaltic Pump ☐ Hand Pump ☐

Gas Lift/ Displacement Pump ☐ Other \_\_\_\_\_

Sampling Equipment (Make, Model, etc.)

Teflon bailer w/ teflon check valve for volatiles and attachment for 45 micron filter-media and polypropylene cord.

Sample Equipment Decon'd? (Y/N) per SAT (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft BTOC

Weather: partly cloudy, dusk, tr. breeze, 50 °F

Lab Analyses: (Circle)

VOA SVOA METALS

PEST/PCBS

TPH 8015

CATIONS

ANIONS

TDS

Others: 8010/8020 AP 10/92 TAL

Metals: (Circle) Filtered Unfiltered Both

Field Dups.: Y/(N) Referee Dups.: (Y/N)

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*BTOC = Below Top of Casing (or other measurement reference point)  
SWL = Static Water Level

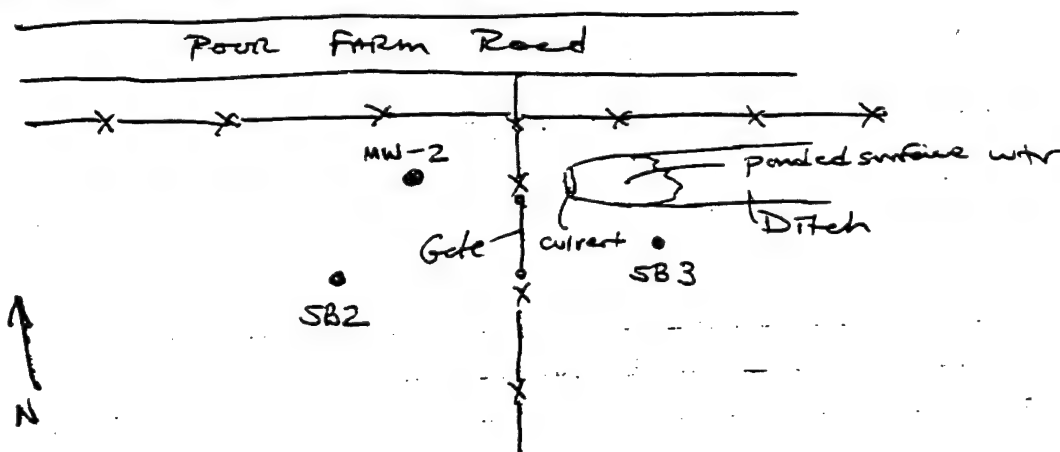
# Surface Water Sampling Record

Fieldbook:  
931802-08/10  
Book # 5

Project Name VTANG Burlington, VT  
Location V4-SW3  
Site Site 4 Drainage Ditch - west end (near site)  
Recorded By G. Mayner  
Checked By GKm

Project Number 931802-08  
Sample Number \*V4-SW3-1094  
Duplicate Number V4-SW3-1094-D  
Date 10/28/94 \*1345-1506  
Date 10/28/94 1858 / 11/15/94  
\*Extra volumes collected for MS/MSD QA/QC.

## Sampling Point Location (sketch)



## Water Parameters

\* clear, w/ very light cloudy tint  
Before Sampling: pH 7.98 EC 183  $\mu$ S/cm Temperature 10.7 °C  
After Sampling: pH 7.28 EC 174  $\mu$ S/cm Temperature 10.2 °C  
\* wtr had slight stagnant or foul odor (almost like turpentine)  
Numerous frogs living in culvert surface water  
\* culvert is underlain by concrete.

## Sampling Information \* collected with stainless steel ladle.

Analytical Parameter	Sampling Depth	✓ If Field Filtered	Preservation Method	Volume Required/sample	Sample Bottle I.D.s
VOCs 8010/8020	Surface		HCL/40°C	(2) 40 ml	V4-SW3-1094
SVOCs CLP 10/92	"		40°C	(2) 1 liter	V4-SW3-1094-D
TPH 8015	"		HCL/40°C	(2) 40 ml/liter Gm	
TOTAL TAL metals	"		HNO <sub>3</sub> /40°C	(1) 1 liter	↓
TPH 8015	"		40°C	(2) 1 liter Gm	↓

# Soil / Sediment Sampling Record

Field book:  
931802-08/10 BK#5

V4-D1

Project Name <u>VTANG</u>	Project Number <u>931802-08</u>
Location <u>Site 4 Sediment Location D1</u>	Sample Number <u>V4-D1-00.5</u> <u>and V4-D1-00.5-D</u>
Recorded By <u>G. Maynor</u>	Duplicate Number _____
Date <u>10/28/94</u> <u>1600</u>	Checked by <u>GKM</u>
Site <u>Site 4 Drainage Ditch, D1</u>	Date <u>10/28/94</u> / <u>11/15/94</u>

Sampling Equipment 6 inch x 1 7/8 Diameter Stainless steel Sleeve

Sample Type: ☐ Soil ☒ Sediment ☐ Rock

Sample Type Description

USCS Soil Type SM/SW, Sand/silt, fn to v. fn., + fn to coarse  
sand, loose, v. moist

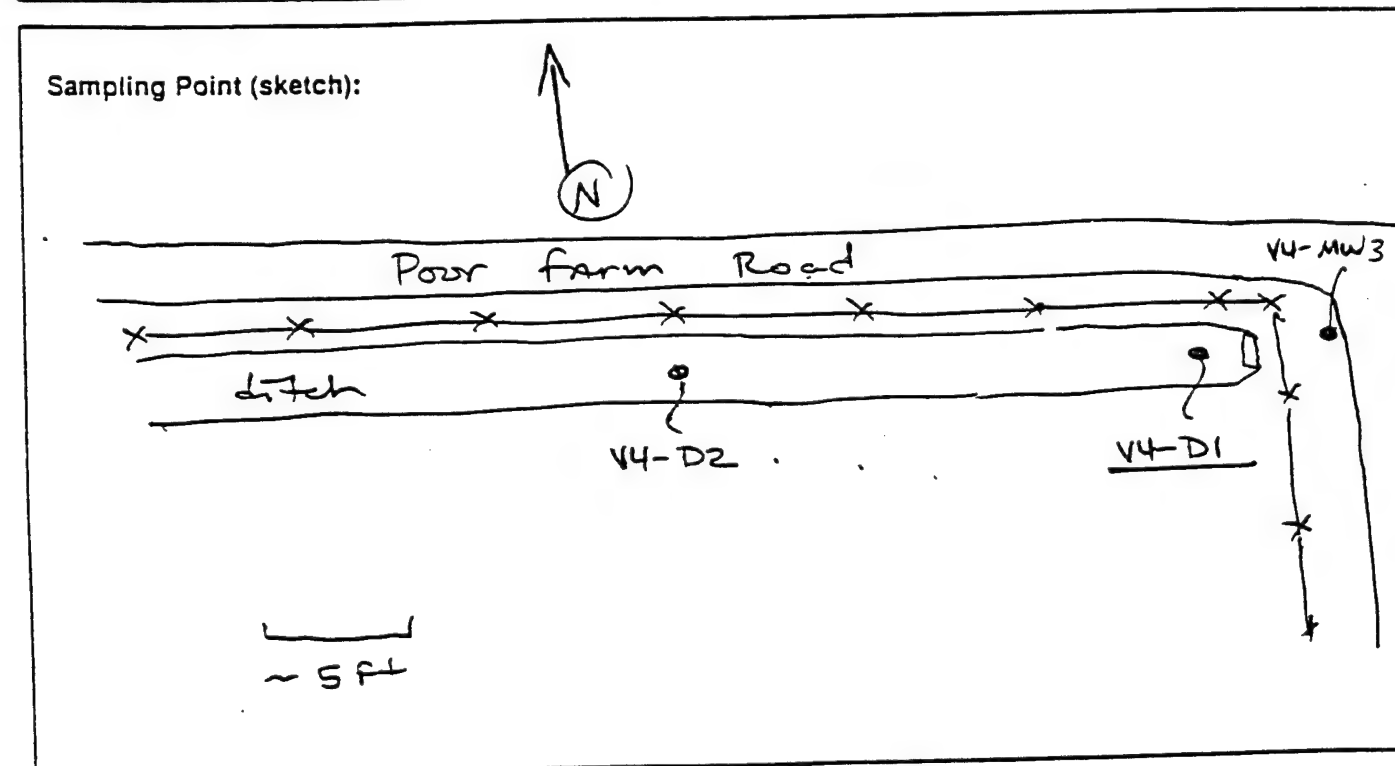
Color D. Olive Brn (2.5Y 3/3)

Odor none, 0 ppm OVM

Depth 0-0.5' bgs

Number of Samples (2): 3 sleeves

Comments sampled for VOCs, SVOCs,  
TPH, and TAL Metals. GKM 11/15/94



# Soil / Sediment Sampling Record

Field book!  
931802-08/10  
BK #5

V4-D2

Project Name <u>VTANG</u>	Project Number <u>931802-08</u>
Location <u>Site 4 Sediment location D2</u>	Sample Number <u>V4-D2-00.5</u>
Recorded By <u>G. Maynor</u>	Duplicate Number <u>N/A</u> <small>* Extra volume for QA/QC - MS/MSD</small>
Date <u>10/28/94 1545</u>	Checked by <u>GKM</u>
Site <u>Site 4, (Drainage Ditch) D2</u>	Date <u>10/28/94 / 11/16/94</u>

Sampling Equipment 6" stainless steel liner (1 7/8 inch Diameter)

Sample Type: ☐ Soil ☒ Sediment ☐ Rock

Sample Type Description

USCS Soil Type SM, Sand/Silt, fn to v. fn, w/ much

Color Dark Olive Brown (2.5Y 3/3) vegetative/root material somewhat peaty, v. moist.

Odor None, 0 ppm OVM

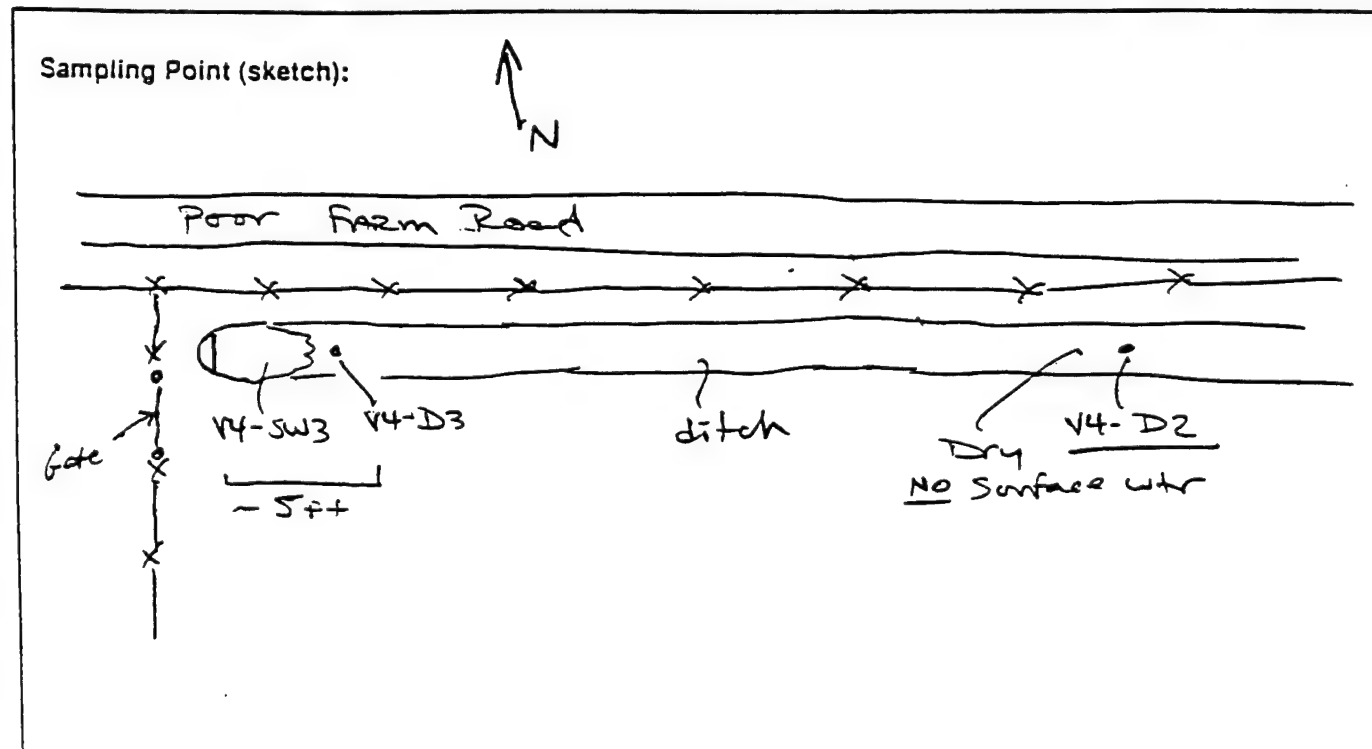
Depth 0-0.5' bgs

Number of Samples (1) 3 sleeves w/ extra sleeve for ms/msd

Comments Dry - no surface wtr.

Analyses - VOCs 8010/8020, TPH 8015, SVOCs

CP 3/90 & TAC metals



Form F-1026  
9/1/91

# Soil / Sediment Sampling Record

Fieldbook:  
931802-08/10  
BK #5

V4-D3

Project Name <u>VTANG-</u>	Project Number <u>931802-08</u>
Location <u>Site 4 Sediment Location D3</u>	Sample Number <u>V4-D3-00.5</u>
Recorded By <u>G. Maynor</u>	Duplicate Number <u>N/A</u>
Date <u>10/28/94 1520 Hrs</u>	Checked by <u>G. Maynor</u>
Site <u>Site 4 D3</u>	Date <u>10/28/94</u>

Sampling Equipment stainless steel liner 1 7/8-inch Diameter x 6-inches long

Sample Type: ☐ Soil ☒ Sediment ☐ Rock

Sample Type Description

USCS Soil Type SW/SP: fine to coarse sand, olive brn, w/

Color olive brn. (2.5Y 3/3) Some dominantly fine grained. v. moist, loose.

Odor None, 0 ppm - OVM.

Depth 0 - 0.5' bgs

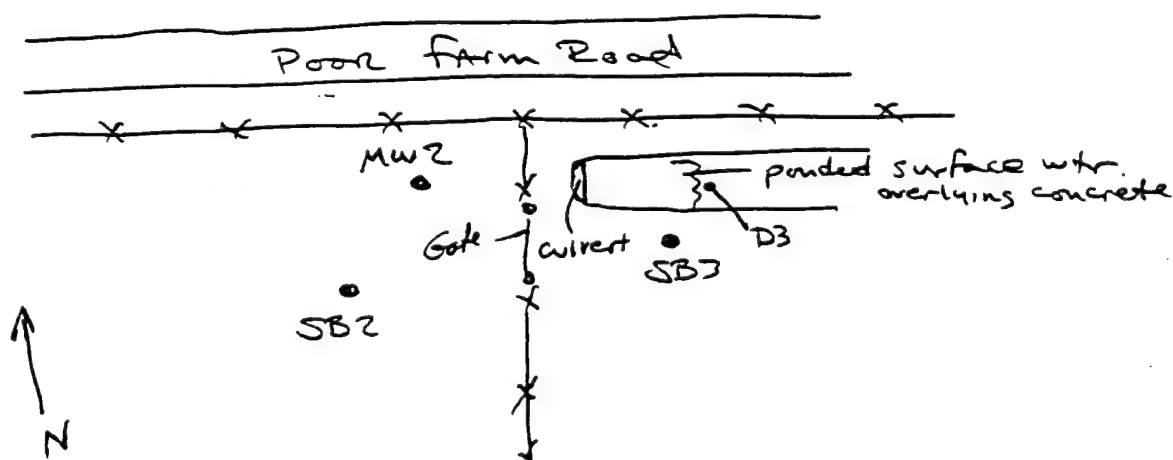
Number of Samples (1) V4-D3-00.5 w/ split for VT HMMID

Comments (2) 6" sleeves/sample

OVM reading on sediment: 0 ppm

Analyses: VOCs 8010/8020, SVOCs CLP 3/90, TPH 8015 and TAL metals

Sampling Point (sketch):



## **APPENDIX D: SURVEY DATA**

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PINKHAM ENGINEERING ASSOCIATES, INC.

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*Engineers ♦ Planners ♦ Landscape Architects ♦ Surveyors*

November 17, 1994

Mr. Greg Maynor  
The Earth Technology Corporation  
683 Emory Valley Road  
Oak Ridge, TN 37830

RE: VTANG - P.O. No. 95P-G001-DC4

Dear Greg:

The following is a list of the borings at the referenced with coordinates and elevations. Also included for your use are coordinates of our traverse stations. Also attached are a hard copy of the field notes and of the CAD drawing and an AutoCad .DWG file on disk.

The elevations are referenced to an VTANG reference Bench Mark which is a paint mark on the northwest tower footing being the westerly tower south of the fire station presently under construction, elevation 325.41'. A second Bench Mark is located in the concrete pad southerly of the Taxiway "F" & "D" intersection and being the top of a brass disk set about 3" below the surface, elevation 335.71'. The coordinates are based upon NAD 27 and tied into station "Calibration Point (RR Spk)" located in the Army National Guard Apron south of Taxiway "C" and are to third order accuracy.

Our traverse had an accuracy of better than 1:30000. The data was adjusted to about 1:50000.

Please call if you have any questions.

Sincerely,

Larry D. Young, L.S.  
Chief of Survey  
Licence No. 568

cc: Kathleen D. Burden



POINT	NORTH	SOUTH	ELEV	DESCRIPTION
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TRAVERSE POINTS

1	721008.1	329816.5	325.71	TR 1
3	720712.2	330505.0	324.71	TR 3
4	721207.0	329927.7	323.52	TR 4
5	721481.6	329852.0	317.86	TR 5
6	721832.3	329999.2	308.94	TR 6
7	721888.4	330136.4	310.10	TR 7
8	721702.7	330320.9	310.58	TR 8
9	721775.2	330529.2	275.31	TR 9
10	721919.1	330435.7	279.19	TR 10
11	720895.8	330869.4	289.77	TR 11
12	721539.8	330470.5	302.00	TR 12
13	720898.9	331568.2	279.26	PK 13
14	719949.0	331544.8	326.26	TR 14
15	720439.7	330841.8	324.63	TR 15
16	720520.9	330914.2	323.88	TR 16
17	720584.4	330798.1	326.79	TR 17
18	720712.2	330505.0	324.71	TR 3
20	719421.9	332133.8	333.91	TR 20
21	718736.4	332108.5	334.79	TR 21
22	718472.5	332035.5	334.36	TR 22
23,	718835.4	332331.3	244.19	TR 23
53,	718472.5	332035.5	334.36	TR 22
54,	718736.4	332108.5	334.77	TR 21

V1-TEST PIT ?

100	721237.9	329907.7	323.46	GRD
101	721251.8	329900.5	323.24	GRD
102	721259.6	329913.4	322.95	GRD
103	721245.0	329923.5	323.30	GRD

V1-BR-4

104			323.43	GS
105			324.77	TOP CASE
106	721270.7	329972.8	323.60	MARK

V1-RFW-1

107			323.05	GS
108	721289.5	329946.7	325.24	MARK

V1-RFW-1A

109	721287.8	329942.6	325.83	MARK
110			323.13	GS

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
111	721476.0	329810.6	315.80	CL RD
112	721444.3	329898.0	320.70	V1-SG-58
113	721496.2	329889.6	314.63	V1-SG-59
114	721504.9	329937.6	312.54	V1-SG-16
V1-MW-2I				
115			312.04	GS
116	721590.3	329895.2	313.85	MARK
V1-MW-2				
117			312.17	GS
118	721582.6	329891.9	314.26	MARK
120	721658.2	329904.6	311.34	V1-B-22
V1-MW-1				
121			309.97	GS
122	721762.7	329877.3	311.71	MARK
123			311.94	TOP CASE
124	721760.1	329907.2	309.46	V1-SG-11
125	721980.5	329738.9	298.19	CL INT
128	721716.9	330005.0	311.35	VI-B-23
129	721665.2	329977.3	311.45	VI-B-5
V1-BP-2				
130			311.08	GS
131	721619.9	329960.2	313.41	MARK
132			313.60	TOP CASE
133	721592.8	329989.7	311.38	VI-B-4
134	721525.6	329981.0	311.89	VI-B-21

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
135	721453.8	329965.4	312.98	VI-B-3
136	721447.0	329999.1	313.87	VI-B-2
V1-MW-6				
139			312.25	GS
140	721529.3	330054.0	314.28	MARK
141			314.47	TOP CASE
V1-MW-7				
142			313.74	GS
143	721514.8	330103.2	315.88	MARK
144			316.06	TOP CASE
V1-MW-7I				
145			314.11	GS
146	721505.0	330110.1	315.58	MARK
147	721503.7	330194.4	313.23	V1-BP-18
V1-MW-3				
148			313.54	GS
149	721494.5	330193.7	315.05	MARK
150	721582.1	330033.6	312.28	VI-B-8
151	721564.8	330091.1	312.58	VI-B-20
152	721623.4	330076.5	311.82	VI-B-7
V1-BP-3				
153			312.10	GS
154	721623.9	330053.1	314.37	MARK
155	721665.0	330039.0	311.86	VI-B6
157	721737.3	330048.8	310.55	GS
159	721553.0	330187.0	311.83	V1-SG-52

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
TEST PIT SRI-3				
160	721565.0	330220.1	311.36	TP-SRI-3
161	721561.6	330217.0	311.36	TP-SRI-3
162	721574.2	330209.2	310.97	TP-SRI-3
163	721571.0	330206.7	311.04	TP-SRI-3
164	721604.3	330228.7	311.81	V1-SG-51
BP-8				
165			310.83	GS
166	721732.3	330141.7	313.26	MARK
167	721416.2	329972.5	315.10	VI-B-1
168	721786.3	330070.0	309.65	V1-SG-38
169	721734.0	330071.8	310.14	V1-SG-37
170	721771.0	330020.8	310.10	V1-SG-18
171	721865.0	329966.1	308.86	VI-B-14
172	721770.3	329958.1	310.91	V1-SG-10
174	721791.7	330114.6	309.92	V1-SG-9
175	721740.9	330118.8	310.39	V1-SG-40
176	721846.6	330100.7	309.94	V1-SG
177	721879.0	330075.9	308.92	V1-SG
V1-MW-12				
178	721926.6	330124.8	312.08	MARK
179			310.32	GS
180	721889.9	330104.2	310.39	V1-SG-66
181	721859.5	330162.2	311.84	VI-B-16
V1-OB-4				
182	721839.4	330212.2	315.36	MARK
183			312.86	GS

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V1-BR-2 184 185	721815.8	330215.4	315.46 312.43	MARK GS
V1-MW-9 186 187	721797.3	330261.5	312.81 310.90	MARK GS
V1-OB-3 188 189	721803.4	330087.1	310.54 309.72	MARK GS
191	721889.6	330148.6	310.52	V1-SG-67
192	721848.4	330200.6	313.23	V1-SG-47
V1-OB-2 193 194	721737.3	330049.0	312.46 310.60	MARK GS
V1-OB-1 195 196	721733.2	329945.7	313.19 310.79	MARK GS
V1-BR-1 197 198	721892.5	329977.8	310.05 307.14	MARK GS
V1-RFW-2 199 200	721925.7	329984.3	308.15 305.48	MARK GS
V1-MW-11 201 202	721739.0	330203.0	312.84 311.05	MARK GS
203	721695.3	330122.9	310.75	V1-SG-41
204	721668.9	330124.6	311.30	VI-B-19
V1-BP-4 205 206	721622.4	330141.3	313.96 311.94	MARK GS

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V1-MW-13				
207	721639.1	330172.6	313.19	MARK
208			311.27	GS
V1-MW-5				
209	721649.2	330227.6	313.18	MARK
210			310.91	GS
TEST PIT SRI-4				
211	721677.1	330307.6	308.48	TP-SRI-4
212	721661.2	330313.2	308.51	TP-SRI-4
213	721659.7	330307.7	309.04	TP-SRI-4
214	721675.1	330303.3	308.90	TP-SRI-4
215	721668.2	330308.0	308.84	TP-SRI-4
TEST PIT SRI-1				
216	721698.5	330302.0	310.57	TP-SRI-1
217	721702.9	330302.1	310.33	TP-SRI-1
218	721701.5	330320.2	310.38	TP-SRI-1
219	721696.5	330319.6	310.24	TP-SRI-1
220	721700.5	330310.3	310.67	TP-SRI-1
V1-BP-13				
221	721684.4	330321.3	311.21	MARK
222			308.37	GS
V1-MW-4				
223	721709.3	330306.4	312.02	MARK
224			310.02	GS
V1-BP-12				
225	721714.7	330340.1	311.49	MARK
226			308.95	GS
227	721789.0	330279.8	309.52	V1-BP-14
TEST PIT SRI-5				
228	721762.2	330348.0	307.33	TP-SRI-5
229	721766.4	330348.2	307.28	TP-SRI-5
230	721758.3	330360.5	306.67	TP-SRI-5
231	721762.8	330354.8	306.70	TP-SRI-5

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V1-MW-8				
232	721778.7	330362.7	309.48	MARK
233			307.68	GS
234	721765.1	330261.2	310.53	V1-SG-45
235	721711.8	330458.1	273.04	VI-SW-1
V1-RFW-4				
236	721667.5	330520.2	279.77	MARK
237			277.53	GS
238	721678.2	330525.7	278.07	CM
239	721687.2	330549.2	275.65	CL RD
V1-MW-10				
240	721806.6	330453.0	280.45	MARK
241			278.21	GS
242	721428.2	330313.2	283.17	VI-SW-2-D2
TEST PIT SRI-6				
243	721419.2	330239.6	309.79	TP-SRI-6
244	721434.0	330248.4	310.23	TP-SRI-6
245	721435.2	330244.0	310.51	TP-SRI-6
246	721426.1	330243.5	309.95	TP-SRI-6
TEST PIT SRI-2				
247	721482.4	330243.7	309.70	TP-SRI-2
248	721477.3	330243.9	309.82	TP-SRI-2
249	721479.3	330227.3	312.02	TP-SRI-2
250	721483.5	330227.8	311.95	TP-SRI-2
251	721479.6	330237.1	310.38	TP-SRI-2
V1-RFW-3				
252	721877.8	330386.0	284.08	MARK
253			281.86	GS
254	721876.3	330361.3	282.99	VI-B-15
V1-BR-3				
255	721889.9	330381.4	284.95	MARK
256			282.11	GS

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
257	721873.4	330406.5	279.50	V1-SG-62
258	721918.0	330383.9	280.92	V1-SG-63
259	721873.8	330356.1	284.25	V1-SG
260	721894.7	330398.6	280.17	V1-SG
261	721976.6	330341.6	284.82	CL INT
V1-MW-14				
262	721971.0	330463.9	277.68	MARK
263			276.64	GS
V1-BR-5				
264	721968.7	330474.4	276.65	MARK
265			275.20	GS
266	720853.0	331174.4	284.18	V4-B5
267	720857.4	331167.6	284.30	V4-SG-23
268	720818.0	331131.2	284.48	V4-B1
269	720819.2	331134.1	284.46	V4-SG-25
V4-MW-1				
270	720791.4	331109.9	284.11	MARK
271			284.51	GS
272	720762.4	331110.3	286.17	V4SG-4GW7
V4-MW-2				
273	720854.6	331219.6	283.51	MARK
274			283.81	GS
275	720823.8	331214.0	284.06	V4-B-2
276	720850.0	331237.7	283.29	4SG-1
277	720855.1	331203.4	283.83	4SG-2



POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V4-BG-1				
278			288.31	GS
279	720639.3	331326.6	287.93	MARK
280	720826.8	331288.2	282.71	V4-B3
281	720847.0	331256.3	281.37	4SG-22
282	720842.7	331273.8	281.10	V4-SW3-D3
283	720829.9	331291.3	282.06	4SG-21
284	720823.5	331439.6	287.49	V4-B6
285	720826.2	331420.8	287.39	4SG-3
286	720856.8	331436.3	277.32	V4-SW2-D2
287	720834.6	331467.8	285.99	4SG-4
288	720836.9	331514.0	286.32	4SG-5 4G
289	720866.4	331524.1	275.94	V4-SW1-D1
290	720864.2	331546.2	281.37	4SG-17 4
291	720847.5	331623.1	283.64	4SG-28
V4-MW-3				
292			281.23	GS
293	720850.5	331551.3	280.81	MARK
294	720923.3	331569.8	278.34	CL INT
295	720897.1	331490.7	280.69	4SG-15
296	720894.0	331441.1	281.71	4SG-14
297	720889.9	331391.9	282.11	4SG-13
298	720885.3	331341.1	282.62	4SG-12
299	720880.4	331290.8	282.86	4SG-11

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
300	720877.3	331241.7	283.54	4SG-10
301	720872.7	331192.4	284.08	4SG-9
302	720869.0	331142.2	284.62	4SG-8
303	720863.2	331045.8	286.03	4SG-6
304	720866.6	331092.5	285.15	4SG-7
V3-MW-2				
305			297.65	GS
306	720620.3	330938.7	297.28	MARK
307	720621.9	330932.7	298.03	3SG-17
308	720603.7	330944.9	297.54	3GW-6
V3-MW-3				
309			298.97	GS
310	720582.5	330960.1	298.60	MARK
311	720589.8	330923.9	299.31	3SG11
312	720599.1	330916.7	297.36	3SG-12
313	720597.9	330918.9	297.34	V3-B-5
314	720592.3	330907.9	298.08	3SG-15
315	720608.1	330910.2	297.37	3SG-14
316	720619.6	330905.0	297.60	3SG-13
317	720619.2	330903.4	297.54	V3-B4
318	720763.9	330907.6	292.73	3SG-20
V3-MW-1				
319			297.97	GS
320	720655.1	330905.8	297.65	MARK
321	720639.7	330878.3	297.90	3SG-9

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
322	720626.8	330874.9	297.30	3SG-3
323	720617.9	330884.1	297.66	3SG-2 3GW-2
324	720617.3	330881.5	297.61	V3-B3
325	720614.3	330875.9	297.26	3SG-6
326	720607.3	330879.2	297.60	V3-B1
327	720622.0	330861.0	297.85	3SG-4
328	720610.5	330869.0	297.34	3SG-3
329	720600.9	330876.5	298.22	3SG-7
330	720591.1	330882.8	299.15	3SG-10
331	720594.6	330887.8	297.81	3SG-1 3GW-1
332	720593.5	330893.5	297.89	V3-B2
V3-BG-1 333			325.90	GS
335	720564.2	330826.6	325.38	MARK
336	721085.9	330092.7	322.38	NAIL SET
337	721185.6	330163.1	296.97	VI-SW3-D3
V2-BG-1 338			333.99	GS
339	718935.4	332100.4	335.96	MARK
V2-MW-1 340			252.38	GS
341	718987.7	332333.1	254.05	MARK
V2-OB-5 342			253.76	GS
343	718928.4	332309.1	256.11	MARK

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V2-MW-2				
344			249.93	GS
345	718881.1	332316.0	251.54	MARK
V2-MW-3				
346			245.89	GS
347	718832.4	332324.8	247.71	MARK
348	718791.1	332479.0	227.25	V2-SW3-D
349	718923.5	332554.9	223.28	V2-SW2-D
350	719044.4	332536.0	223.29	V2-SW1-D

PEAPROJ7166POINT

**APPENDIX E:     STATE OF VERMONT SPLIT  
ANALYTICAL DATA**

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## State of Vermont

Department of Fish and Wildlife  
Department of Forests, Parks and Recreation  
Department of Environmental Conservation  
State Geologist  
Natural Resources Conservation Council  
RELAY SERVICE FOR THE HEARING IMPAIRED  
1-800-253-0191 TDD>Voice  
1-800-253-0195 Voice>TDD

AGENCY OF NATURAL RESOURCES  
Department of Environmental Conservation  
Hazardous Materials Management Division  
103 South Main Street / West Building  
Waterbury, Vermont 05671-0404  
802-241-3888  
FAX 802-241-3296

February 6, 1995

Greg Maynor  
Earth Tech  
683 Emory Valley Road  
Oak Ridge, Tennessee 37830


RE: Vermont Air National Guard Base, Burlington - Site #77-0043

Dear Mr. Maynor;

Enclosed with this letter are the analytical results from the split samples you collected during the supplemental investigation at the Vermont Air National Guard Base. I will forward a summary table of these results once I have prepared one.

I'm looking forward to your report, and to seeing you again up here in the Green Mountains.

Sincerely,

  
Brian Woods, Hydrogeologist  
Sites Management Section

Enclosure

BW:/.../vtang/splits.let

OCT 20 1994

10/19/94

Department of Environmental Conservation Laboratory  
Method 8240 - Volatile Organics in Solids

GJD

Lab Id: 11660 Report To: BRIAN WOODS  
Location: V3-B5-0305Phone: 241-3888 Date Collected: 9/13/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/21/94 Over hold? No  
Methanol Extraction Sample wt.: 1.1 g

Percent moisture: 11.4

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Vinyl chloride	1000	N.D.				
Chloromethane	1000	N.D.				
Bromomethane	1000	N.D.				
Chloroethane	1000	N.D.				
Trichlorofluoromethane	1000	N.D.				
Acetone	10000	N.D.				
1,1-Dichloroethene	700	N.D.				
Carbon disulfide	10000	N.D.				
Methylene chloride	700	N.D.				
Methyl-t-butylether (MTBE)	1000	N.D.				
1,2-Dichloroethene	700	N.D.				
1,1-Dichloroethane	700	N.D.				
Vinyl acetate	7000	N.D.				
2-Butanone	10000	N.D.				
Chloroform	700	N.D.				
1,1,1-Trichloroethane	700	N.D.				
Carbon tetrachloride	700	N.D.				
Benzene	700	N.D.				
1,2-Dichloroethane	700	N.D.				
Trichloroethene	700	N.D.				
1,2-Dichloropropane	700	N.D.				
Bromodichloromethane	700	N.D.				
4-Methyl-2-pentanone	7000	N.D.				
cis-1,2-Dichloropropene	700	N.D.				
Toluene	700	N.D.				
trans-1,3-Dichloropropene	700	N.D.				
1,1,2-Trichloroethane	700	N.D.				
2-Hexanone	7000	N.D.				
Tetrachloroethene	700	N.D.				
Dibromochloromethane	700	N.D.				
Chlorobenzene	700	N.D.				
Ethylbenzene	700	N.D.				
Xylenes	700	N.D.				
Styrene	700	N.D.				
Bromoform	700	N.D.				
1,1,2,2-Tetrachloroethane	700	N.D.				
Total Volatile Hydrocarbons	10000	5040000	E	13		

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 93% D8-Toluene . . . . . 107% 4-Bromofluorobenzene . 134%

Notes: Capillary column used with EPA approval. TVH based on xylene.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

OCT 20 1994

10/19/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Solids

GJD

Lab Id: 11660 Report To: BRIAN WOODS  
Location: V3-B5-0305

Phone: 241-3888 Date Collected: 9/13/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/21/94 Over hold? No Dilution factor: 1  
Sample wt.: 11.1 g

Date extracted: 9/16/94  
Percent moisture: 36

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	700	N.D.				
Aniline	700	N.D.				
Phenol	700	N.D.				
Bis(2-chloroethyl)ether	700	N.D.				
2-Chlorophenol	1000	N.D.				
1,3-Dichlorobenzene	700	N.D.				
1,4-Dichlorobenzene	700	N.D.				
1,2-Dichlorobenzene	700	N.D.				
Benzylalcohol	1000	N.D.				
2-Methylphenol	700	N.D.				
Bis(2-chloroisopropyl)ether.	700	N.D.				
Hexachloroethane	700	N.D.				
4-Methylphenol	700	N.D.				
N-Nitroso-di-n-propylamine	700	N.D.				
Nitrobenzene	700	N.D.				
Isophorone	700	N.D.				
2-Nitrophenol	1000	N.D.				
2,4-Dimethylphenol	700	N.D.				
Bis(2-chloroethoxy)methane	700	N.D.				
2,4-Dichlorophenol	1000	N.D.				
1,2,4-Trichlorobenzene	700	N.D.				
Naphthalene	700	4800				
Benzoic acid	7000	N.D.				
4-Chloroaniline	700	N.D.				
Hexachlorobutadiene	700	N.D.				
4-Chloro-3-methylphenol	1000	N.D.				
2-Methylnaphthalene	700	3900				
Hexachlorocyclopentadiene	700	N.D.				
2,4,6-Trichlorophenol	1000	N.D.				
2,4,5-Trichlorophenol	1000	N.D.				
2-Chloronaphthalene	700	N.D.				
2-Nitroaniline	3000	N.D.				
Acenaphthylene	700	N.D.				
Dimethylphthalate	1000	N.D.				
2,6-Dinitrotoluene	1000	N.D.				
Acenaphthene	700	N.D.				
3-Nitroaniline	7000	N.D.				
2,4-Dinitrophenol	7000	N.D.				
Dibenzofuran	700	N.D.				
2,4-Dinitrotoluene	1000	N.D.				
4-Nitrophenol	7000	N.D.				
Fluorene	700	N.D.				
4-Chlorophenyl phenyl ether	700	N.D.				
Diethylphthalate	1000	N.D.				
4-Nitroaniline	7000	N.D.				
4,6-Dinitro-2-methylphenol	7000	N.D.				
N-Nitrosodiphenylamine	700	N.D.				
Azobenzene	700	N.D.				
4-Bromophenyl phenyl ether	700	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve



10/19/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Solids

GJ

Lab Id: 11660 Report To: BRIAN WOODS  
Location: V3-B5-0305

Phone: 241-3888 Date Collected: 9/13/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/21/94 Over hold? No Dilution factor: 1  
Sample wt.: 11.1 g

Date extracted: 9/16/94  
Percent moisture: 36

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Hexachlorobenzene	700	N.D.				
Pentachlorophenol	3000	N.D.				
Phenanthrene	700	N.D.				
Anthracene	700	N.D.				
Di-n-butylphthalate	1000	N.D.				
Fluoranthene	700	N.D.				
Pyrene	700	N.D.				
Butyl benzyl phthalate	1000	N.D.				
Benzo[a]anthracene	700	N.D.				
Chrysene	700	N.D.				
3,3'-Dichlorobenzidine	7000	N.D.				
Bis(2-ethylhexyl)phthalate	1000	N.D.				
Benzo[b]fluoranthene	700	N.D.				
Benzo[k]fluoranthene	700	N.D.				
Di-n-octylphthalate	700	N.D.				
Benzo[a]pyrene	700	N.D.				
Indeno[1,2,3,cd]pyrene	700	N.D.				
Dibenz[a,h]anthracene	700	N.D.				
Benzo[g,h,i]perylene	700	N.D.				
C-3 Alkylbenzene isomers	700	N.D.				
C-4 Alkylbenzene isomers	700	2100				
1-Methylnaphthalene	700	2500				
Dimethylnaphthalene isomers	700	3100				
Trimethylnaphthalene isomers	700	980				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol . . . . .	60%	Phenol-D6. . . . .	94%	Nitrobenzene-D5. . . . .	74%
2-Fluorobiphenyl . . . . .	88%	2,3,6-Tribromophenol . . . . .	93%	4-Terphenyl-D14. . . . .	105%

Notes: GC/MS also detected xylenes, and C3 alkyl substituted benzenes. Also large number of alkanes in the boiling range of decane and tetradecane.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

11/02/94

Department of Environmental Conservation Laboratory  
Method 8080 - PCB's/Pesticides in Solids

NOV 02 1994

SRL

Lab Id: 12042 Report To: B/Woods  
Location: V3-B5-0305Phone: 241-3888 Date Collected: 9/10/94  
Program: 59 7043 Chain of Custody? Yes

Notes: samples logged on by David Clemens after completion of S8270 test.

Date Analyzed: 10/24/94 Over hold? No Dilution factor: 1  
Sample wt.: 13.7 gDate extracted: 10/17/94  
Percent moisture: 11.5

Parameter	Units are ug/kg dw		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Aldrin	2	N.D.				
$\alpha$ -BHC	2	N.D.				
$\beta$ -BHC	2	N.D.				
$\delta$ -BHC	2	N.D.				
Lindane	2	N.D.				
Chlordane	10	N.D.				
4,4'-DDD	2	N.D.				
4,4'-DDE	2	N.D.				
4,4'-DDT	2	12				
Dieldrin	2	N.D.				
Endosulfan I	2	N.D.				
Endosulfan II	2	N.D.				
Endosulfan sulfate	2	N.D.				
Endrin	2	N.D.				
Endrin aldehyde	2	N.D.				
Heptachlor	2	N.D.				
Heptachlor epoxide	2	N.D.				
Methoxychlor	2	N.D.				
Toxaphene	40	N.D.				
PCB's	50	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 75% DCB Surrogate #2 . . . 107%

Notes: DDT confirmed with GC/MS 10-24-94.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

10/19/94

Department of Environmental Conservation Laboratory  
Analytical Results

GJD

Lab Id: 11660 Report To: BRIAN WOODS  
Location: V3-B5-0305

Phone: 241-3888 Date Collected: 9/13/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Recovery Dups ? Percent
Aluminum - Solid		6,160.	mg/kg dw			24	98
Antimony - Solid	<	5.00	mg/kg dw			14	
Arsenic - Solid		2.60	mg/kg dw			5	
Barium - Solid		46.0	mg/kg dw				
Beryllium - Solid	<	.50	mg/kg dw				
Cadmium - Solid	<	5.00	mg/kg dw			15	
Calcium - Solid		601.	mg/kg dw				
Chromium - Solid	<	25.0	mg/kg dw				
Cobalt - Solid	<	25.0	mg/kg dw				
Copper - Solid	<	25.0	mg/kg dw				
Iron - Solid		10,500.	mg/kg dw			4	
Lead - Solid	<	25.0	mg/kg dw			11	102
Magnesium - Solid		1,580.	mg/kg dw			12	
Manganese - Solid		287.	mg/kg dw				
Mercury - Solid	<	.100	mg/kg dw				
Nickel - Solid	<	25.0	mg/kg dw				
Selenium - Solid	<	2.50	mg/kg dw				
Silver - Solid	<	.50	mg/kg dw				
Thallium - Solid	<	1.00	mg/kg dw			0	
Vanadium - Solid		8.00	mg/kg dw				
Zinc - Solid		37.0	mg/kg dw			3	

Remarks: E = Estimated Value  
P = Present, not Quantitated

J = Value may be in Error  
Q = Insufficient Quantity

M = Sample Matrix Problem  
R = Results not Reported

N = Sample not Processed  
W = Sample Warm on Arrival

OCT 20 1994

10/19/94

Department of Environmental Conservation Laboratory  
Method 8240 - Volatile Organics in Solids

GJD

Lab Id: 11636 Report To: BRIAN WOODS  
Location: V4-BG-1921

Phone: 241-3888 Date Collected: 9/10/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/20/94 Over hold? No  
Heated Purge Sample wt.: 5.0 g

Percent moisture: 20.4

Parameter	Units are ug/kg dw PQL	Remark Result	Rel % Diff.	Spiked Dups ?	Percent Recovery
Vinyl chloride	10	N.D.			
Chloromethane	10	N.D.			
Bromomethane	10	N.D.			
Chloroethane	10	N.D.			
Trichlorofluoromethane	10	N.D.			
Acetone	100	N.D.			
1,1-Dichloroethene	6	N.D.			
Carbon disulfide	100	N.D.			
Methylene chloride	6	N.D.			
Methyl-t-butylether (MTBE)	10	N.D.			
1,2-Dichloroethene	6	N.D.			
1,1-Dichloroethane	6	N.D.			
Vinyl acetate	60	N.D.			
2-Butanone	100	N.D.			
Chloroform	6	N.D.			
1,1,1-Trichloroethane	6	N.D.			
Carbon tetrachloride	6	N.D.			
Benzene	6	N.D.			
1,2-Dichloroethane	6	N.D.			
Trichloroethene	6	N.D.			
1,2-Dichloropropane	6	N.D.			
Bromodichloromethane	6	N.D.			
4-Methyl-2-pentanone	60	N.D.			
cis-1,2-Dichloropropene	6	N.D.			
Toluene	6	N.D.			
trans-1,3-Dichloropropene	6	N.D.			
1,1,2-Trichloroethane	6	N.D.			
2-Hexanone	60	N.D.			
Tetrachloroethene	6	N.D.			
Dibromochloromethane	6	N.D.			
Chlorobenzene	6	N.D.			
Ethylbenzene	6	N.D.			
Xylenes	6	N.D.			
Styrene	6	N.D.			
Bromoform	6	N.D.			
1,1,2,2-Tetrachloroethane	6	N.D.			
Total Volatile Hydrocarbons	100	N.D.			

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 110% D8-Toluene . . . . . 106% 4-Bromofluorobenzene . 100%

Notes: Capillary column used with EPA approval.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

OAT 2 4 19

10/19/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Solids

GJD

Lab Id: 11636 Report To: BRIAN WOODS  
Location: V4-BG-1921

Phone: 241-3888 Date Collected: 9/10/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/20/94 Over hold? No Dilution factor: 1  
Sample wt.: 12.2 g

Date extracted: 9/14/94  
Percent moisture: 19

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	500	N.D.				
Aniline	500	N.D.				
Phenol	500	N.D.				
Bis(2-chloroethyl)ether	500	N.D.				
2-Chlorophenol	1000	N.D.				
1,3-Dichlorobenzene	500	N.D.				
1,4-Dichlorobenzene	500	N.D.				
1,2-Dichlorobenzene	500	N.D.				
Benzylalcohol	1000	N.D.				
2-Methylphenol	500	N.D.				
Bis(2-chloroisopropyl)ether	500	N.D.				
Hexachloroethane	500	N.D.				
4-Methylphenol	500	N.D.				
N-Nitroso-di-n-propylamine	500	N.D.				
Nitrobenzene	500	N.D.				
Isophorone	500	N.D.				
2-Nitrophenol	1000	N.D.				
2,4-Dimethylphenol	500	N.D.				
Bis(2-chloroethoxy)methane	500	N.D.				
2,4-Dichlorophenol	1000	N.D.				
1,2,4-Trichlorobenzene	500	N.D.				
Naphthalene	500	N.D.				
Benzoic acid	5000	N.D.				
4-Chloroaniline	500	N.D.				
Hexachlorobutadiene	500	N.D.				
4-Chloro-3-methylphenol	1000	N.D.				
2-Methylnaphthalene	500	N.D.				
Hexachlorocyclopentadiene	500	N.D.				
2,4,6-Trichlorophenol	1000	N.D.				
2,4,5-Trichlorophenol	1000	N.D.				
2-Chloronaphthalene	500	N.D.				
2-Nitroaniline	2000	N.D.				
Acenaphthylene	500	N.D.				
Dimethylphthalate	1000	N.D.				
2,6-Dinitrotoluene	1000	N.D.				
Acenaphthene	500	N.D.				
3-Nitroaniline	5000	N.D.				
2,4-Dinitrophenol	5000	N.D.				
Dibenzofuran	500	N.D.				
2,4-Dinitrotoluene	1000	N.D.				
4-Nitrophenol	5000	N.D.				
Fluorene	500	N.D.				
4-Chlorophenyl phenyl ether	500	N.D.				
Diethylphthalate	1000	N.D.				
4-Nitroaniline	5000	N.D.				
4,6-Dinitro-2-methylphenol	5000	N.D.				
N-Nitrosodiphenylamine	500	N.D.				
Azobenzene	500	N.D.				
4-Bromophenyl phenyl ether	500	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

10/19/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Solids

GJD

Lab Id: 11636 Report To: BRIAN WOODS  
Location: V4-BG-1921

Phone: 241-3888 Date Collected: 9/10/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/20/94 Over hold? No Dilution factor: 1  
Sample wt.: 12.2 g

Date extracted: 9/14/94  
Percent moisture: 19

Parameter	Units are ug/kg dw PQL	Remark Result Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Hexachlorobenzene	500	N.D.			
Pentachlorophenol	2000	N.D.			
Phenanthrene	500	N.D.			
Anthracene	500	N.D.			
Di-n-butylphthalate	1000	N.D.			
Fluoranthene	500	N.D.			
Pyrene	500	N.D.			
Butyl benzyl phthalate	1000	N.D.			
Benzo[a]anthracene	500	N.D.			
Chrysene	500	N.D.			
3,3'-Dichlorobenzidine	5000	N.D.			
Bis(2-ethylhexyl)phthalate	1000	N.D.			
Benzo[b]fluoranthene	500	N.D.			
Benzo[k]fluoranthene	500	N.D.			
Di-n-octylphthalate	500	N.D.			
Benzo[a]pyrene	500	N.D.			
Indeno[1,2,3,cd]pyrene	500	N.D.			
Dibenz[a,h]anthracene	500	N.D.			
Benzo[g,h,i]perylene	500	N.D.			
C-3 Alkylbenzene isomers	500	N.D.			
C-4 Alkylbenzene isomers	500	N.D.			
1-Methylnaphthalene	500	N.D.			
Dimethylnaphthalene isomers	500	N.D.			
Trimethylnaphthalene isomers	500	N.D.			

## Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol . . . . .	43%	Phenol-D6. . . . .	75%	Nitrobenzene-D5. . . . .	72%
2-Fluorobiphenyl . . . . .	78%	2,3,6-Tribromophenol . . . . .	96%	4-Terphenyl-D14. . . . .	114%

Notes:

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

11/02/94

Department of Environmental Conservation Laboratory  
Method 8080 - PCB's/Pesticides in Solids

SRL

Lab Id: 12041 Report To: B/Woods  
Location: V4-BG-1921Phone: 241-3888 Date Collected: 9/10/94  
Program: 59 7043 Chain of Custody? Yes

Notes: samples logged on by David Clemens after completion of S8270 test.

Date Analyzed: 10/18/94 Over hold? No  
Sample wt.: 10.3 g

Dilution factor: 1

Date extracted: 10/14/94  
Percent moisture: 17.9

Parameter	Units are ug/kg dw		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Aldrin	2	N.D.				
$\alpha$ -BHC	2	N.D.				
$\beta$ -BHC	2	N.D.				
$\delta$ -BHC	2	N.D.				
Lindane	2	N.D.				
Chlordane	10	N.D.				
4,4'-DDD	2	N.D.				
4,4'-DDE	2	N.D.				
4,4'-DDT	2	N.D.				
Dieldrin	2	N.D.				
Endosulfan I	2	N.D.				
Endosulfan II	2	N.D.				
Endosulfan sulfate	2	N.D.				
Endrin	2	N.D.				
Endrin aldehyde	2	N.D.				
Heptachlor	2	N.D.				
Heptachlor epoxide	2	N.D.				
Methoxychlor	2	N.D.				
Toxaphene	60	N.D.				
PCB's	70	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 66% DCB Surrogate #2 . . . 123%

Notes:

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

OCT 20 1994

10/19/94

Department of Environmental Conservation Laboratory  
Analytical Results

GJD

Lab Id: 11636 Report To: BRIAN WOODS  
Location: V4-BG-1921Phone: 241-3888 Date Collected: 9/10/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Recovery Dups ? Percent
Aluminum - Solid		4,760.	mg/kg dw			18	95
Antimony - Solid	<	5.00	mg/kg dw			10	91
Arsenic - Solid		2.80	mg/kg dw			1	87
Barium - Solid		9.00	mg/kg dw			2	86
Beryllium - Solid	<	.50	mg/kg dw			7	96
Cadmium - Solid	<	5.00	mg/kg dw			26	97
Calcium - Solid		1,560.	mg/kg dw			2	
Chromium - Solid	<	25.0	mg/kg dw			2	91
Cobalt - Solid	<	50.0	mg/kg dw			22	100
Copper - Solid	<	25.0	mg/kg dw			23	97
Iron - Solid		12,600.	mg/kg dw			3	
Lead - Solid	<	25.0	mg/kg dw			26	98
Magnesium - Solid		2,870.	mg/kg dw			4	
Manganese - Solid		322.	mg/kg dw			10	105
Mercury - Solid	<	.100	mg/kg dw			4	98
Nickel - Solid	<	25.0	mg/kg dw			20	98
Selenium - Solid	<	2.50	mg/kg dw			1	95
Silver - Solid	<	.50	mg/kg dw			4	90
Thallium - Solid	<	1.00	mg/kg dw			14	94
Vanadium - Solid		10.0	mg/kg dw			17	95
Zinc - Solid		31.0	mg/kg dw			9	101

Remarks: E = Estimated Value

J = Value may be in Error

M = Sample Matrix Problem

N = Sample not Processed

P = Present, not Quantitated

Q = Insufficient Quantity

R = Results not Reported

W = Sample Warm on Arrival



12/06/94

Department of Environmental Conservation Laboratory  
Method 8240 - Volatile Organics in Solids

GJD

Lab Id: 12266 Report To: BRIAN WOODS  
Location: V4-D3-00.5

Phone: 241-3888 Date Collected: 10/28/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/08/94 Over hold? No  
Heated Purge Sample wt.: 4.9 g

Percent moisture: 12.5

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Vinyl chloride	10	N.D.				
Chloromethane	10	N.D.				
Bromomethane	10	N.D.				
Chloroethane	10	N.D.				
Trichlorofluoromethane	10	N.D.				
Acetone	100	N.D.				
1,1-Dichloroethene	6	N.D.				
Carbon disulfide	100	N.D.				
Methylene chloride	6	N.D.				
Methyl-t-butylether (MTBE)	10	N.D.				
1,2-Dichloroethene	6	N.D.				
1,1-Dichloroethane	6	N.D.				
Vinyl acetate	60	N.D.				
2-Butanone	100	N.D.				
Chloroform	6	N.D.				
1,1,1-Trichloroethane	6	N.D.				
Carbon tetrachloride	6	N.D.				
Benzene	6	N.D.				
1,2-Dichloroethane	6	N.D.				
Trichloroethene	6	N.D.				
1,2-Dichloropropane	6	N.D.				
Bromodichloromethane	6	N.D.				
4-Methyl-2-pentanone	60	N.D.				
cis-1,2-Dichloropropene	6	N.D.				
Toluene	6	N.D.				
trans-1,3-Dichloropropene	6	N.D.				
1,1,2-Trichloroethane	6	N.D.				
2-Hexanone	60	N.D.				
Tetrachloroethene	6	N.D.				
Dibromochloromethane	6	N.D.				
Chlorobenzene	6	N.D.				
Ethylbenzene	6	N.D.				
Xylenes	6	N.D.				
Styrene	6	N.D.				
Bromoform	6	N.D.				
1,1,2,2-Tetrachloroethane	6	N.D.				
Total Volatile Hydrocarbons	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 96% D8-Toluene . . . . . 116% 4-Bromofluorobenzene . 82

Notes: Capillary column used with EPA approval. Sample contained a compound tentatively identified as methyl naphthalene.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Solids

GJD

Lab Id: 12266 Report To: BRIAN WOODS  
Location: V4-D3-00.5

Phone: 241-3888 Date Collected: 10/28/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1  
Sample wt.: 13.9 g

Date extracted: 10/31/94  
Percent moisture: 13

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	400	N.D.				
Aniline	400	N.D.				
Phenol	400	N.D.				
Bis(2-chloroethyl)ether	400	N.D.				
2-Chlorophenol	800	N.D.				
1,3-Dichlorobenzene	400	N.D.				
1,4-Dichlorobenzene	400	N.D.				
1,2-Dichlorobenzene	400	N.D.				
Benzylalcohol	800	N.D.				
2-Methylphenol	400	N.D.				
Bis(2-chloroisopropyl)ether	400	N.D.				
Hexachloroethane	400	N.D.				
4-Methylphenol	400	N.D.				
N-Nitroso-di-n-propylamine	400	N.D.				
Nitrobenzene	400	N.D.				
Isophorone	400	N.D.				
2-Nitrophenol	800	N.D.				
2,4-Dimethylphenol	400	N.D.				
Bis(2-chloroethoxy)methane	400	N.D.				
2,4-Dichlorophenol	800	N.D.				
1,2,4-Trichlorobenzene	400	N.D.				
Naphthalene	400	N.D.				
Benzoic acid	4000	N.D.				
4-Chloroaniline	400	N.D.				
Hexachlorobutadiene	400	N.D.				
4-Chloro-3-methylphenol	800	N.D.				
2-Methylnaphthalene	400	N.D.				
Hexachlorocyclopentadiene	400	N.D.				
2,4,6-Trichlorophenol	800	N.D.				
2,4,5-Trichlorophenol	800	N.D.				
2-Chloronaphthalene	400	N.D.				
2-Nitroaniline	2000	N.D.				
Acenaphthylene	400	N.D.				
Dimethylphthalate	800	N.D.				
2,6-Dinitrotoluene	800	N.D.				
Acenaphthene	400	N.D.				
3-Nitroaniline	4000	N.D.				
2,4-Dinitrophenol	4000	N.D.				
Dibenzofuran	400	N.D.				
2,4-Dinitrotoluene	800	N.D.				
4-Nitrophenol	4000	N.D.				
Fluorene	400	N.D.				
4-Chlorophenyl phenyl ether	400	N.D.				
Diethylphthalate	800	N.D.				
4-Nitroaniline	4000	N.D.				
4,6-Dinitro-2-methylphenol	4000	N.D.				
N-Nitrosodiphenylamine	400	N.D.				
Azobenzene	400	N.D.				
4-Bromophenyl phenyl ether	400	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Solids

GJD

Lab Id: 12266 Report To: BRIAN WOODS  
Location: V4-D3-00.5

Phone: 241-3888  
Program: 59 7043

Date Collected: 10/28/94  
Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1  
Sample wt.: 13.9 g

Date extracted: 10/31/94  
Percent moisture: 13

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked: Dups ?	Percent Recovery
Hexachlorobenzene	400	N.D.				
Pentachlorophenol	2000	N.D.				
Phenanthrene	400	N.D.				
Anthracene	400	N.D.				
Di-n-butylphthalate	800	N.D.				
Fluoranthene	400	N.D.				
Pyrene	400	N.D.				
Butyl benzyl phthalate	800	N.D.				
Benzo[a]anthracene	400	N.D.				
Chrysene	400	N.D.				
3,3'-Dichlorobenzidine	4000	N.D.				
Bis(2-ethylhexyl)phthalate	800	N.D.				
Benzo[b]fluoranthene	400	N.D.				
Benzo[k]fluoranthene	400	N.D.				
Di-n-octylphthalate	400	N.D.				
Benzo[a]pyrene	400	N.D.				
Indeno[1,2,3,cd]pyrene	400	N.D.				
Dibenz[a,h]anthracene	400	N.D.				
Benzo[g,h,i]perylene	400	N.D.				
C-3 Alkylbenzene isomers	400	N.D.				
C-4 Alkylbenzene isomers	400	N.D.				
1-Methylnaphthalene	400	N.D.				
Dimethylnaphthalene isomers	400	N.D.				
Trimethylnaphthalene isomers	400	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol . . . . .	47%	Phenol-D6. . . . .	54%	Nitrobenzene-D5. . . . .	59%
2-Fluorobiphenyl . . . . .	56%	2,3,6-Tribromophenol . . . . .	78%	4-Terphenyl-D14. . . . .	46%

Notes: Detected several unknown compounds.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

DEC 8 7 1994

12/06/94

Department of Environmental Conservation Laboratory  
Method 8080 - PCB's/Pesticides in Solids

GJD

Lab Id: 12266 Report To: BRIAN WOODS  
Location: V4-D3-00.5

Phone: 241-3888 Date Collected: 10/28/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/30/94 Over hold? No Dilution: 2  
Sample wt.: 12.0 g

Date extracted: 11/15/94  
Percent moisture: 13

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Aldrin	4	N.D.		20	Y	50
$\alpha$ -BHC	4	N.D.				
$\beta$ -BHC	4	N.D.				
$\delta$ -BHC	4	N.D.				
Lindane	4	N.D.		17	Y	54
Chlordane	20	N.D.				
4,4'-DDD	4	N.D.				
4,4'-DDE	4	N.D.		18	Y	66
4,4'-DDT	4	N.D.		19	Y	59
Dieldrin	4	N.D.				
Endosulfan I	4	N.D.				
Endosulfan II	4	N.D.				
Endosulfan sulfate	4	N.D.				
Endrin	4	N.D.		23	Y	76
Endrin aldehyde	4	N.D.		26	Y	67
Heptachlor	4	N.D.				
Heptachlor epoxide	4	N.D.				
Methoxychlor	4	N.D.				
Toxaphene	100	N.D.				
PCB's	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 55% DCB Surrogate #2 . . . 81%

Notes:

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94

Department of Environmental Conservation Laboratory  
Analytical Results

GJD

Lab Id: 12266 Report To: BRIAN WOODS  
Location: V4-D3-00.5

Phone: 241-3888 Date Collected: 10/28/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Dups ?	Recovery Percent
Aluminum - Solid		5,010.	mg/kg dw			8		
Antimony - Solid	<	5.00	mg/kg dw			1		86
Arsenic - Solid		3.60	mg/kg dw			8		
Barium - Solid		9.30	mg/kg dw			7		96
Beryllium - Solid	<	.05	mg/kg dw			14	Y	96
Cadmium - Solid	<	5.00	mg/kg dw			9	Y	97
Calcium - Solid		1,480.	mg/kg dw			22		
Chromium - Solid	<	25.0	mg/kg dw			9	Y	90
Cobalt - Solid	<	25.0	mg/kg dw			9	Y	96
Copper - Solid	<	25.0	mg/kg dw			10	Y	97
Iron - Solid		10,200.	mg/kg dw			5		
Lead - Solid	<	25.0	mg/kg dw			4	Y	97
Magnesium - Solid		2,680.	mg/kg dw			5		
Manganese - Solid		233.	mg/kg dw			7		
Mercury - Solid	<	.100	mg/kg dw			10	Y	99
Nickel - Solid	<	25.0	mg/kg dw			7	Y	100
Selenium - Solid	<	2.50	mg/kg dw			0	Y	70
Silver - Solid	<	.50	mg/kg dw			0	Y	98
Thallium - Solid	<	1.00	mg/kg dw			3		
Vanadium - Solid		7.00	mg/kg dw					
Zinc - Solid		85.0	mg/kg dw			15		96

Remarks: E = Estimated Value

J = Value may be in Error

M = Sample Matrix Problem

N = Sample not Processed

P = Present, not Quantitated

Q = Insufficient Quantity

R = Results not Reported

W = Sample Warm on Arrival

DEC 07 1994

12/06/94

Department of Environmental Conservation Laboratory  
Method 8240 - Volatile Organics in Water

GJD

Lab Id: 12263 Report To: BRIAN WOODS  
Location: V4-MW2-1094Phone: 241-3888 Date Collected: 10/27/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/09/94 Over hold? No Dilution: 5

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Vinyl chloride	50	N.D.				
Chloromethane	50	N.D.				
Bromomethane	50	N.D.				
Chloroethane	50	N.D.				
Trichlorofluoromethane	50	N.D.				
Acetone	500	N.D.				
1,1-Dichloroethene	25	N.D.				
Carbon disulfide	500	N.D.				
Methylene chloride	25	N.D.				
Methyl-t-butylether (MTBE)	25	N.D.				
1,2-Dichloroethene	25	N.D.				
1,1-Dichloroethane	25	N.D.				
Vinyl acetate	250	N.D.				
2-Butanone	500	N.D.				
Chloroform	25	N.D.				
1,1,1-Trichloroethane	25	N.D.				
Carbon tetrachloride	25	N.D.				
Benzene	25	225				
1,2-Dichloroethane	25	N.D.				
Trichloroethene	25	N.D.				
1,2-Dichloropropane	25	N.D.				
Bromodichloromethane	25	N.D.				
4-Methyl-2-pentanone	250	N.D.				
cis-1,2-Dichloropropene	25	N.D.				
Toluene	25	40				
trans-1,3-Dichloropropene	25	N.D.				
1,1,2-Trichloroethane	25	N.D.				
2-Hexanone	250	N.D.				
Tetrachloroethene	25	N.D.				
Dibromochloromethane	25	N.D.				
Chlorobenzene	25	N.D.				
Ethylbenzene	25	443				
Xylenes	25	1340				
Styrene	25	N.D.				
Bromoform	25	N.D.				
1,1,2,2-Tetrachloroethane	25	N.D.				
Total Volatile Hydrocarbons	500	22600	E			

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 102% D8-Toluene . . . . . 84% 4-Bromofluorobenzene . 94%

Notes: Capillary column used with EPA approval. Sample contains compounds tentatively identified as C3 and C4 alkyl benzenes and naphthalene.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

DEC 8 7 1994

12/06/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Water

GJD

Lab Id: 12263 Report To: BRIAN WOODS  
Location: V4-MW2-1094

Phone: 241-3888 Date Collected: 10/27/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1

Date extracted: 11/10/94

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	5	N.D.				
Aniline	5	N.D.				
Phenol	5	N.D.				
Bis(2-chloroethyl)ether	5	N.D.				
2-Chlorophenol	10	N.D.				
1,3-Dichlorobenzene	5	N.D.				
1,4-Dichlorobenzene	5	N.D.				
1,2-Dichlorobenzene	5	N.D.				
Benzylalcohol	10	N.D.				
2-Methylphenol	5	N.D.				
Bis(2-chloroisopropyl)ether	5	N.D.				
Hexachloroethane	5	N.D.				
4-Methylphenol	5	N.D.				
N-Nitroso-di-n-propylamine	5	N.D.				
Nitrobenzene	5	N.D.				
Isophorone	5	N.D.				
2-Nitrophenol	10	N.D.				
2,4-Dimethylphenol	5	N.D.				
Bis(2-chloroethoxy)methane	5	N.D.				
2,4-Dichlorophenol	10	N.D.				
1,2,4-Trichlorobenzene	5	N.D.				
Naphthalene	5	74				
Benzoic acid	50	N.D.				
4-Chloroaniline	5	N.D.				
Hexachlorobutadiene	5	N.D.				
4-Chloro-3-methylphenol	10	N.D.				
2-Methylnaphthalene	5	28				
Hexachlorocyclopentadiene	5	N.D.				
2,4,6-Trichlorophenol	10	N.D.				
2,4,5-Trichlorophenol	10	N.D.				
2-Chloronaphthalene	5	N.D.				
2-Nitroaniline	20	N.D.				
Acenaphthylene	5	N.D.				
Dimethylphthalate	10	N.D.				
2,6-Dinitrotoluene	10	N.D.				
Acenaphthene	5	N.D.				
3-Nitroaniline	50	N.D.				
2,4-Dinitrophenol	50	N.D.				
Dibenzofuran	5	N.D.				
2,4-Dinitrotoluene	10	N.D.				
4-Nitrophenol	50	N.D.				
Fluorene	5	N.D.				
4-Chlorophenyl phenyl ether	5	N.D.				
Diethylphthalate	10	N.D.				
4-Nitroaniline	50	N.D.				
4,6-Dinitro-2-methylphenol	50	N.D.				
N-Nitrosodiphenylamine	5	N.D.				
Azobenzene	5	N.D.				
4-Bromophenyl phenyl ether	5	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

DEC 8 7 1994

12/06/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Water

GJD

Lab Id: 12263 Report To: BRIAN WOODS  
Location: V4-MW2-1094

Phone: 241-3888 Date Collected: 10/27/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1

Date extracted: 11/10/94

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Hexachlorobenzene	5	N.D.				
Pentachlorophenol	20	N.D.				
Phenanthrene	5	N.D.				
Anthracene	5	N.D.				
Di-n-butylphthalate	10	N.D.				
Fluoranthene	5	N.D.				
Pyrene	5	N.D.				
Butyl benzyl phthalate	10	N.D.				
Benzo[a]anthracene	5	N.D.				
Chrysene	5	N.D.				
3,3'-Dichlorobenzidine	50	N.D.				
Bis(2-ethylhexyl)phthalate	10	N.D.				
Benzo[b]fluoranthene	5	N.D.				
Benzo[k]fluoranthene	5	N.D.				
Di-n-octylphthalate	5	N.D.				
Benzo[a]pyrene	5	N.D.				
Indeno[1,2,3,cd]pyrene	5	N.D.				
Dibenz[a,h]anthracene	5	N.D.				
Benzo[g,h,i]perylene	5	N.D.				
C-3 Alkylbenzene isomers	5	440				
C-4 Alkylbenzene isomers	5	140				
1-Methylnaphthalene	5	22				
Dimethylnaphthalene isomers	5	13				
Trimethylnaphthalene isomers	5	5				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol . . . . .	0%	Phenol-D6. . . . .	0%	Nitrobenzene-D5. . . . .	66%
2-Fluorobiphenyl . . . . .	78%	2,3,6-Tribromophenol . . . . .	21%	4-Terphenyl-D14. . . . .	81%

Notes: Poor recovery of phenol surrogate.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve



12/06/94

Department of Environmental Conservation Laboratory  
Method 8080 - PCB's/Pesticides in Water

GJD

Lab Id: 12263 Report To: BRIAN WOODS  
Location: V4-MW2-1094

Phone: 241-3888 Date Collected: 10/27/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/30/94 Over hold? No Dilution: 1

Date extracted: 11/14/94

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Aldrin	.02	N.D.		0	Y	43
$\alpha$ -BHC	.02	N.D.				
$\beta$ -BHC	.02	N.D.				
$\delta$ -BHC	.02	N.D.		2	Y	61
Lindane	.02	N.D.				
Chlordane	.12	N.D.				
4,4'-DDD	.02	N.D.				
4,4'-DDE	.02	N.D.		8	Y	61
4,4'-DDT	.02	N.D.		2	Y	64
Dieldrin	.02	N.D.				
Endosulfan I	.02	N.D.				
Endosulfan II	.02	N.D.				
Endosulfan sulfate	.02	N.D.		3	Y	80
Endrin	.02	N.D.				
Endrin aldehyde	.02	N.D.		2	Y	85
Heptachlor	.02	N.D.				
Heptachlor epoxide	.02	N.D.				
Methoxychlor	.02	N.D.				
Toxaphene	.5	N.D.				
PCB's	.6	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 28% DCB Surrogate #2 . . . 36%

Notes: Sample extract cleaned on florisil 11-29-94. Note: Heptachlor epoxide not detectable due to unknown interference.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

DEC 07 1994

12/06/94

Department of Environmental Conservation Laboratory  
Analytical Results

GJD

Lab Id: 12263 Report To: BRIAN WOODS  
Location: V4-MW2-1094Phone: 241-3888 Date Collected: 10/27/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Recovery Dups ? Percent
Aluminum - Water		5,010.	ug/l			3	105
Antimony - Water	<	10.0	ug/l				
Arsenic - Water		95.0	ug/l				
Barium - Water		87.0	ug/l				
Beryllium - Water	<	1.0	ug/l				
Cadmium - Water	<	2.0	ug/l				
Calcium - Water		106.	mg/l				
Chromium - Water		11.0	ug/l				
Cobalt - Water		34.0	ug/l				
Copper - Water	<	50.0	ug/l				
Iron - Water		70,700.	ug/l				
Lead - Water		15.0	ug/l				
Magnesium - Water		17.4	mg/l				
Manganese - Water		5,770.	ug/l				
Mercury - Water	<	.2	ug/l				
Nickel - Water	<	50.0	ug/l				
Selenium - Water	<	5.0	ug/l				
Silver - Water	<	5.0	ug/l				
Thallium - Water	<	2.0	ug/l				
Vanadium - Water	<	10.0	ug/l				
Zinc - Water	<	50.0	ug/l				

Remarks: E = Estimated Value  
P = Present, not QuantitatedJ = Value may be in Error  
Q = Insufficient QuantityM = Sample Matrix Problem  
R = Results not ReportedN = Sample not Processed  
W = Sample Warm on Arrival

11/22/94

Department of Environmental Conservation Laboratory  
Analytical Results

NOV 22 1994

GJD

Lab Id: 12264 Report To: BRIAN WOODS  
Location: V4-MW2-1094-F

Phone: 241-3888 Date Collected: 10/27/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Recovery Dups ? Percent
Aluminum - Water		12.0	ug/l				
Antimony - Water	<	10.0	ug/l				
Arsenic - Water		69.0	ug/l				
Barium - Water		71.0	ug/l				
Beryllium - Water	<	1.0	ug/l				
Cadmium - Water	<	2.0	ug/l				
Calcium - Water		103.	mg/l				
Chromium - Water	<	10.0	ug/l				
Cobalt - Water		29.0	ug/l				
Copper - Water	<	50.0	ug/l				
Iron - Water		43,000.	ug/l				
Lead - Water	<	5.0	ug/l				
Magnesium - Water		15.4	mg/l				
Manganese - Water		5,340.	ug/l				
Mercury - Water	<	.2	ug/l				
Nickel - Water	<	50.0	ug/l				
Selenium - Water	<	5.0	ug/l				
Silver - Water	<	5.0	ug/l				
Thallium - Water	<	2.0	ug/l				
Vanadium - Water	<	10.0	ug/l				
Zinc - Water	<	50.0	ug/l				

Remarks: E = Estimated Value  
P = Present, not Quantitated

J = Value may be in Error  
Q = Insufficient Quantity

M = Sample Matrix Problem  
R = Results not Reported

N = Sample not Processed  
W = Sample Warm on Arrival

12/06/94

Department of Environmental Conservation Laboratory  
Method 8240 - Volatile Organics in Water

GJD

Lab Id: 12265 Report To: BRIAN WOODS  
Location: V4-SW3-1094

Phone: 241-3888 Date Collected: 10/28/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/09/94 Over hold? No Dilution: 1

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Vinyl chloride	10	N.D.				
Chloromethane	10	N.D.				
Bromomethane	10	N.D.				
Chloroethane	10	N.D.				
Trichlorofluoromethane	10	N.D.				
Acetone	100	285	J			
1,1-Dichloroethene	5	N.D.				
Carbon disulfide	100	N.D.				
Methylene chloride	5	N.D.				
Methyl-t-butylether (MTBE)	5	N.D.				
1,2-Dichloroethene	5	N.D.				
1,1-Dichloroethane	5	N.D.				
Vinyl acetate	50	N.D.				
2-Butanone	100	N.D.				
Chloroform	5	N.D.				
1,1,1-Trichloroethane	5	N.D.				
Carbon tetrachloride	5	N.D.				
Benzene	5	N.D.				
1,2-Dichloroethane	5	N.D.				
Trichloroethene	5	N.D.				
1,2-Dichloropropane	5	N.D.				
Bromodichloromethane	5	N.D.				
4-Methyl-2-pentanone	50	N.D.				
cis-1,2-Dichloropropene	5	N.D.				
Toluene	5	N.D.				
trans-1,3-Dichloropropene	5	N.D.				
1,1,2-Trichloroethane	5	N.D.				
2-Hexanone	50	N.D.				
Tetrachloroethene	5	N.D.				
Dibromochloromethane	5	N.D.				
Chlorobenzene	5	N.D.				
Ethylbenzene	5	N.D.				
Xylenes	5	N.D.				
Styrene	5	N.D.				
Bromoform	5	N.D.				
1,1,2,2-Tetrachloroethane	5	N.D.				
Total Volatile Hydrocarbons	100	3320	E			

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 106% D8-Toluene . . . . . 92% 4-Bromofluorobenzene . 92%

Notes: Capillary column used with EPA approval. Sample contains compounds tentatively identified as C3 and C4 alkyl benzenes.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Water

DEC 8 7 1994

GJD

Lab Id: 12265 Report To: BRIAN WOODS  
Location: V4-SW3-1094

Phone: 241-3888 Date Collected: 10/28/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1

Date extracted: 11/10/94

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	5	N.D.				
Aniline	5	N.D.				
Phenol	5	N.D.		8	Y	37
Bis(2-chloroethyl)ether	5	N.D.				
2-Chlorophenol	10	N.D.		16	Y	63
1,3-Dichlorobenzene	5	N.D.				
1,4-Dichlorobenzene	5	N.D.		16	Y	67
1,2-Dichlorobenzene	5	N.D.				
Benzylalcohol	10	N.D.				
2-Methylphenol	5	N.D.				
Bis(2-chloroisopropyl)ether	5	N.D.				
Hexachloroethane	5	N.D.				
4-Methylphenol	5	N.D.				
N-Nitroso-di-n-propylamine	5	N.D.		11	Y	70
Nitrobenzene	5	N.D.				
Isophorone	5	N.D.				
2-Nitrophenol	10	N.D.				
2,4-Dimethylphenol	5	N.D.				
Bis(2-chloroethoxy)methane	5	N.D.				
2,4-Dichlorophenol	10	N.D.		15	Y	62
1,2,4-Trichlorobenzene	5	N.D.				
Naphthalene	5	N.D.				
Benzoic acid	50	N.D.				
4-Chloroaniline	5	N.D.				
Hexachlorobutadiene	5	N.D.				
4-Chloro-3-methylphenol	10	N.D.		12	Y	82
2-Methylnaphthalene	5	N.D.				
Hexachlorocyclopentadiene	5	N.D.				
2,4,6-Trichlorophenol	10	N.D.				
2,4,5-Trichlorophenol	10	N.D.				
2-Chloronaphthalene	5	N.D.				
2-Nitroaniline	20	N.D.				
Acenaphthylene	5	N.D.				
Dimethylphthalate	10	N.D.				
2,6-Dinitrotoluene	10	N.D.		0	Y	69
Acenaphthene	5	N.D.				
3-Nitroaniline	50	N.D.				
2,4-Dinitrophenol	50	N.D.				
Dibenzofuran	5	N.D.				
2,4-Dinitrotoluene	10	N.D.		17	Y	65
4-Nitrophenol	50	N.D.		34	Y	35
Fluorene	5	N.D.				
4-Chlorophenyl phenyl ether	5	N.D.				
Diethylphthalate	10	N.D.				
4-Nitroaniline	50	N.D.				
4,6-Dinitro-2-methylphenol	50	N.D.				
N-Nitrosodiphenylamine	5	N.D.				
Azobenzene	5	N.D.				
4-Bromophenyl phenyl ether	5	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94

Department of Environmental Conservation Laboratory  
Method 8270 - Semivolatile Organics in Water

DEC 7 1994

GJD

Lab Id: 12265 Report To: BRIAN WOODS  
Location: V4-SW3-1094

Phone: 241-3888 Date Collected: 10/28/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1

Date extracted: 11/10/94

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Hexachlorobenzene	5	N.D.				
Pentachlorophenol	20	N.D.		65	Y	83
Phenanthrene	5	N.D.				
Anthracene	5	N.D.				
Di-n-butylphthalate	10	N.D.				
Fluoranthene	5	N.D.				
Pyrene	5	N.D.		10	Y	72
Butyl benzyl phthalate	10	N.D.				
Benzo[a]anthracene	5	N.D.				
Chrysene	5	N.D.				
3,3'-Dichlorobenzidine	50	N.D.				
Bis(2-ethylhexyl)phthalate	10	N.D.				
Benzo[b]fluoranthene	5	N.D.				
Benzo[k]fluoranthene	5	N.D.				
Di-n-octylphthalate	5	N.D.				
Benzo[a]pyrene	5	N.D.				
Indeno[1,2,3,cd]pyrene	5	N.D.				
Dibenz[a,h]anthracene	5	N.D.				
Benzo[g,h,i]perylene	5	N.D.				
C-3 Alkylbenzene isomers	5	N.D.				
C-4 Alkylbenzene isomers	5	N.D.				
1-Methylnaphthalene	5	N.D.				
Dimethylnaphthalene isomers	5	N.D.				
Trimethylnaphthalene isomers	5	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol . . . . .	45%	Phenol-D6 . . . . .	24%	Nitrobenzene-D5 . . . . .	64%
2-Fluorobiphenyl . . . . .	73%	2,3,5-Tribromophenol . . . . .	109%	4-Terphenyl-D14 . . . . .	69%

Notes: Detected compounds identified as terpeneol and 2-(1-phenylethoxyl)-ethanol CAS#4799-66-0.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94

Department of Environmental Conservation Laboratory  
Method 8080 - PCB's/Pesticides in Water

GJD

Lab Id: 12265 Report To: BRIAN WOODS  
Location: V4-SW3-1094Phone: 241-3888 Date Collected: 10/28/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/30/94 Over hold? No Dilution: 1

Date extracted: 11/14/94

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Aldrin	.02	N.D.				
$\alpha$ -BHC	.02	N.D.				
$\beta$ -BHC	.02	N.D.				
$\delta$ -BHC	.02	N.D.				
Lindane	.02	N.D.				
Chlordane	.12	N.D.				
4,4'-DDD	.02	N.D.				
4,4'-DDE	.02	N.D.				
4,4'-DDT	.02	N.D.				
Dieldrin	.02	N.D.				
Endosulfan I	.02	N.D.				
Endosulfan II	.02	N.D.				
Endosulfan sulfate	.02	N.D.				
Endrin	.02	N.D.				
Endrin aldehyde	.02	N.D.				
Heptachlor	.02	N.D.				
Heptachlor epoxide	.02	N.D.				
Methoxychlor	.02	N.D.				
Toxaphene	.5	N.D.				
PCB's	.6	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 30% DCB Surrogate #2 . . . 14%

Notes: Poor surrogate recovery. Sample extract cleaned on florisil 11-29-94.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94

Department of Environmental Conservation Laboratory  
Analytical Results

GJD

Lab Id: 12265 Report To: BRIAN WOODS  
Location: V4-SW3-1094Phone: 241-3888 Date Collected: 10/28/94  
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Test Name	Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Recovery Dups ? Percent
Aluminum - Water	120.	ug/l				
Antimony - Water	< 10.0	ug/l				
Arsenic - Water	< 5.0	ug/l				
Barium - Water	19.0	ug/l				
Beryllium - Water	2.0	ug/l				
Cadmium - Water	< 2.0	ug/l				
Calcium - Water	15.1	mg/l				
Chromium - Water	< 10.0	ug/l				
Cobalt - Water	< 25.0	ug/l				
Copper - Water	< 50.0	ug/l				
Iron - Water	1,200.	ug/l				
Lead - Water	11.0	ug/l				
Magnesium - Water	1.27	mg/l				
Manganese - Water	94.5	ug/l				
Mercury - Water	< .2	ug/l				
Nickel - Water	< 50.0	ug/l				
Selenium - Water	< 5.0	ug/l				
Silver - Water	< 5.0	ug/l				
Thallium - Water	< 2.0	ug/l				
Vanadium - Water	< 10.0	ug/l				
Zinc - Water	2,140.	ug/l				

Remarks: E = Estimated Value

J = Value may be in Error

M = Sample Matrix Problem

N = Sample not Processed

P = Present, not Quantitated

Q = Insufficient Quantity

R = Results not Reported

W = Sample Warm on Arrival



# CHAIN OF CUSTODY RECORD refer to Earth Tech Coc # V-091294-1

Project Name/Number: <b>V7ANG-SI site 4</b>		Laboratory: <b>Waterbury</b>	
Sampler's Signature: <i>Greg Mayhew</i>		Samples sealed on receipt by Laboratory: Y or N Initial: REMARKS	
Seals broken and remade for addition of preservation: Y or N Initial: <i>GM</i>			
Sample Location	Collection		Description and Number of Containers
	Date	Time	
V4-BG-1921	9/10/94	0950	<div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); display: inline-block;"> VOCs 8010/8020 1 Corindh stainless steel sleeve SVCS 3/40 CCR TPH 2015 11/11/94 55 9/12/94 55 9/12/94 55 </div> <div style="text-align: right;">TOTAL # 2</div>
<div style="font-size: 2em; transform: rotate(-45deg); display: inline-block;"> 9/12/94  <i>Greg Mayhew</i> </div>			
Relinquished by: <i>Greg Mayhew</i> (Signature) <i>Greg Mayhew</i> Received by: <i>Michael G. Goff</i> (Signature) <i>Michael G. Goff</i> 9/12/94 (date/time)		Relinquished by: (Signature) Received at Laboratory by: (Signature) 9/12/94 (date/time)	
Remarks:		Remarks:	

**Remarks:**

# CHAIN OF CUSTODY RECORD

Project Name/Number:  
**VTANG - 931802-08**

Sample(s) Signature:  
*Greg Maynor*

Laboratory:  
**VT HMMID**

Samples sealed at collection:  
**Y** or **N**  
Initial: **GM**

Samples sealed on receipt by Laboratory:  
**Y** or **N**  
Initial: \_\_\_\_\_

Seals broken and remade for addition of preservation:  
**Y** or **N**  
Initial: **GM**

DESCRIPTION AND NUMBER OF CONTAINERS

Sample Location	Collection		Comp/ Grab	DESCRIPTION AND NUMBER OF CONTAINERS										TOTAL	REMARKS		
	Date	Time		40 ml. d.s. WNC	1 Gal. Am. 6.91	SVCs CLP 10/92	500 ml. pl. WNC	Total TAC Metals	500 ml. pl. WNC	Discol. TAC Metals	Unstained Steel Line	6" Stainless Steel Line	6" Stainless Steel Line			4" Stainless Steel Line	
V4-MW2-1094	10/27/94	1648	SW Grab	2	1		2	2	2	2						5	SPLIT OF V4-MW2-1094 FROM SITE V4-MW2, " (ATTACHED)
V4-MW2-1094-F	"	"	"													2	
V4-SW3-1094	10/28/94	1345	Grab GW	2	1		2									5	
V4-D3-00.5	10/28/94	1520	Grab surf. sed. 0-0.5													2	

Relinquished by: *Greg Maynor* 10/28/94 (Signature) (date/time)

Relinquished by: \_\_\_\_\_ (Signature) (date/time)

Received by: *Greg Maynor* 10/28/94 (Signature) (date/time)

Received by: \_\_\_\_\_ (Signature) (date/time)

Remarks:

Remarks:

**APPENDIX F:      INVESTIGATION DERIVED WASTE  
CHARACTERIZATION DATA**

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**WASTEWATER ANALYTICAL RESULTS**

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DATA REPORTING QUALIFIERS

On the Form I, under the column labeled "Q" for qualifier, flag each result with the specific data reporting qualifiers listed below. Up to five qualifiers may be reported on Form I for each compound. The qualifiers to be used are:

- U - This flag indicates the compound was analyzed for but not detected. The CRQL shall be adjusted to reflect any dilution and/or percent moisture.
- J - This flag indicates an estimated value. This flag is used (1) when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL but greater than zero, and (3) when the retention time data indicate the presence of a compound that meets the pesticide/Aroclor identification criteria, and the result is less than the CRQL but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J.
- N - This flag indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N flag is not used.
- P - This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a P.
- C - This flag applies to pesticide results where the identification has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do not apply this flag; use a laboratory-defined flag instead (see the X qualifier).
- B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag shall be used for a tentatively identified compound as well as for a positively identified target compound.  
  
The combination of flags BU or UB is expressly prohibited. Blank contaminants are flagged B only when they are detected in the sample.
- E - This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis. If one or more compounds have a response greater than the upper level of the calibration range, the sample or extract shall be diluted and reanalyzed. All such compounds with a response greater than the upper level of the calibration range shall have the

(con't.)

### DATA REPORTING QUALIFIERS

concentration flagged with an E on Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the DL suffix appended to the sample number.

- D - This flag is used for all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is reanalyzed at a higher dilution factor, as in the E flag, the DL suffix is appended to the sample number on Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the D flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.
- A - This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X - Other specific flags may be required to properly define the results. If used, the flags shall be fully described, with the description attached to the sample data summary package and the SDG Narrative. Begin by using X. If more than one flag is required, use Y and Z as needed. If more than five qualifiers are required for a sample result, use the X flag to represent a combination of several flags. For instance, the X flag might combine the A, B, and D flags for some samples. The laboratory-defined flags are limited to X, Y, and Z.



1D  
HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T10101294

Lab Name: COMPUCHEM, RTP

Contract:

Lab Code: COMPU Case No.: 29274 SAS No.:

SDG No.: 00353

PT10  
Oct. 199

Matrix: (soil/water) WATER

Lab Sample ID: 647652

Sample wt/vol: 5.0(g/ml) ML

Date Received: 10/12/94

% Moisture: decanted: (Y/N)

Date Analyzed: 10/17/94

Dilution Factor: 1 pH:

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	0.50	U
75-01-4-----	Vinyl Chloride	0.55	U
74-83-9-----	Bromomethane	0.45	U
75-00-3-----	Chloroethane	0.50	U
75-35-4-----	1,1-Dichloroethene	0.35	U
75-09-2-----	Methylene Chloride	1.0	B
156-60-5-----	1,2-Dichloroethene	0.31	
75-34-3-----	1,1-Dichloroethane	1.5	
67-66-3-----	Chloroform	5.8	
74-97-5-----	Bromochloromethane	0.25	U
71-55-6-----	1,1,1-Trichloroethane	22	E
56-23-5-----	Carbon Tetrachloride	0.35	U
107-06-2-----	1,2-Dichloroethane	0.25	U
79-01-6-----	Trichloroethene	0.16	J
78-87-5-----	1,2-Dichloropropane	0.30	U
75-27-4-----	Bromodichloromethane	0.34	J
74-95-3-----	Dibromomethane	0.40	U
110-75-8-----	2-CEVE	0.40	U
10061-01-5-----	c-1,3-Dichloropropene	0.30	U
10061-02-6-----	t-1,3-Dichloropropene	0.25	U
79-00-5-----	1,1,2-Trichloroethane	0.25	U
127-18-4-----	Tetrachloroethene	0.30	U
124-48-1-----	Dibromochloromethane	0.30	U
106-93-4-----	1,2-Dibromoethane	0.35	U
108-90-7-----	Chlorobenzene	0.35	U
630-20-6-----	1,1,1,2-Tetrachloroethane	0.35	U
75-25-2-----	Bromoform	0.50	U
79-34-5-----	1,1,2,2-TCA	0.40	U
96-18-4-----	1,2,3-Trichloropropane	0.35	U
108-86-1-----	Bromobenzene	0.85	U
95-49-8-----	2-Chlorotoluene	0.25	U
106-43-4-----	4-Chlorotoluene	0.35	U
541-73-1-----	1,3-Dichlorobenzene	0.20	U
106-46-7-----	1,4-Dichlorobenzene	0.20	U
95-50-1-----	1,2-Dichlorobenzene	0.31	



1D  
HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T10101294DL

Lab Name: COMPUCHEM, RTP

Contract:

Lab Code: COMPU Case No.: 29274 SAS No.:

SDG No.: 00353

PTIC  
Oct. 1994

Matrix: (soil/water) WATER

Lab Sample ID: 647652 R1

Sample wt/vol: 2.5(g/ml) ML

Date Received: 10/12/94

% Moisture: decanted: (Y/N)

Date Analyzed: 10/20/94

Dilution Factor: 2 pH:

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	1.0	U
75-01-4-----	Vinyl Chloride	0.051	JD
74-83-9-----	Bromomethane	0.90	U
75-00-3-----	Chloroethane	1.0	U
75-35-4-----	1,1-Dichloroethene	0.41	JD
75-09-2-----	Methylene Chloride	9.3	BD
156-60-5-----	t-1,2-Dichloroethene	0.12	JD
75-34-3-----	1,1-Dichloroethane	0.67	JD
67-66-3-----	Chloroform	0.15	JDB
74-97-5-----	Bromochloromethane	0.27	J
71-55-6-----	1,1,1-Trichloroethane	21	D
56-23-5-----	Carbon Tetrachloride	0.70	U
107-06-2-----	1,2-Dichloroethane	0.032	JD
79-01-6-----	Trichloroethene	0.13	JD
78-87-5-----	1,2-Dichloropropane	0.60	U
75-27-4-----	Bromodichloromethane	0.21	JD
74-95-3-----	Dibromomethane	0.80	U
110-75-8-----	2-CEVE	0.80	U
10061-01-5-----	c-1,3-Dichloropropene	0.45	JD
10061-02-6-----	t-1,3-Dichloropropene	0.50	U
79-00-5-----	1,1,2-Trichloroethane	0.50	U
127-18-4-----	Tetrachloroethene	0.061	JD
124-48-1-----	Dibromochloromethane	0.60	U
106-93-4-----	1,2-Dibromoethane	0.70	U
108-90-7-----	Chlorobenzene	0.70	U
630-20-6-----	1,1,1,2-Tetrachloroethane	0.70	U
75-25-2-----	Bromoform	1.0	U
79-34-5-----	1,1,2,2-TCA	0.80	U
96-18-4-----	1,2,3-Trichloropropane	0.70	U
108-86-1-----	Bromobenzene	0.16	JD
95-49-8-----	2-Chlorotoluene	0.50	U
106-43-4-----	4-Chlorotoluene	0.70	U
541-73-1-----	1,3-Dichlorobenzene	0.40	U
106-46-7-----	1,4-Dichlorobenzene	0.40	U
95-50-1-----	1,2-Dichlorobenzene	0.42	JBD

1D  
AROMATIC VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T10101294

Lab Name: COMPUCHEM, RTP

Contract:

Lab Code: COMPU Case No.: 29274 SAS No.:

SDG No.: 00353

PT10  
Oct. 199

Matrix: (soil/water) WATER

Lab Sample ID: 647652

Sample wt/vol: 5.0 (g/ml) ML

Date Received: 10/12/94

% Moisture: decanted: (Y/N)

Date Analyzed: 10/17/94

Dilution Factor: 1 pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
74-87-3-----	Methyl-t-butyl ether	5.0	U
71-43-2-----	Benzene	15	B
108-88-3-----	Toluene	3.3	
108-90-7-----	Chlorobenzene	3.5	Z
100-41-4-----	Ethylbenzene	4.3	
106-42-3-----	1,4-Dimethylbenzene	22	BE
108-38-3-----	1,3-Dimethylbenzene	22	BE
95-47-6-----	1,2-Dimethylbenzene	41	E
100-42-5-----	Styrene	2.2	
541-73-1-----	1,3-Dichlorobenzene	0.94	Z
106-46-7-----	1,4-Dichlorobenzene	15	BZ
95-50-1-----	1,2-Dichlorobenzene	11	B

FORM I 8020

1D  
AROMATIC VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T10101294DL

Lab Name: COMPUCHEM, RTP

Contract:

Lab Code: COMPU Case No.: 29274 SAS No.:

SDG No.: 00353

PT10  
Oct. 19 1994

Matrix: (soil/water) WATER

Lab Sample ID: 647652 R2

Sample wt/vol: 1.0 (g/ml) ML

Date Received: 10/12/94

% Moisture: decanted: (Y/N)

Date Analyzed: 10/20/94

Dilution Factor: 5 pH:

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

CAS NO.	COMPOUND		
74-87-3-----	Methyl-t-butyl ether	25	U
71-43-2-----	Benzene	11	BD
108-88-3-----	Toluene	6.4	BD
108-90-7-----	Chlorobenzene	1.2	U
100-41-4-----	Ethylbenzene	1.7	D
106-42-3-----	1,4-Dimethylbenzene	13	D
108-38-3-----	1,3-Dimethylbenzene	17	D
95-47-6-----	1,2-Dimethylbenzene	39	D
100-42-5-----	Styrene	3.9	D
541-73-1-----	1,3-Dichlorobenzene	0.60	JBD
106-46-7-----	1,4-Dichlorobenzene	1.9	BDZ
95-50-1-----	1,2-Dichlorobenzene	3.2	BD

FORM I 8020

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PT-092994

Lab Name: COMPUCHEM ENV. CORP.

Contract: (3-90)-REVS

Lab Code: COMPU

Case No.: 29377

SAS No.:

SDG No.: 00001

PT13

Oct. 199

Matrix: (soil/water) WATER

Lab Sample ID: 643678

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: CN043678A54.D

Level: (low/med) LOW

Date Received: 09/30/94

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 10/03/94

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: \_\_\_\_\_ (uL)

Soil Aliquot Volume: \_\_\_\_\_ (uL)

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

CAS NO.

COMPOUND

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10 U	
74-83-9	Bromomethane	10 U	
75-01-4	Vinyl Chloride	10 U	
75-00-3	Chloroethane	10 U	
75-09-2	Methylene Chloride	10 U	
67-64-1	Acetone	10 U	
75-15-0	Carbon Disulfide	10 U	
75-35-4	1,1-Dichloroethene	10 U	
75-34-3	1,1-Dichloroethane	10 U	
540-59-0	1,2-Dichloroethene (total)	10 U	
67-66-3	Chloroform	4 J	
107-06-2	1,2-Dichloroethane	10 U	
78-93-3	2-Butanone	10 U	
71-55-6	1,1,1-Trichloroethane	10 U	
56-23-5	Carbon Tetrachloride	10 U	
75-27-4	Bromodichloromethane	10 U	
78-87-5	1,2-Dichloropropane	10 U	
10061-01-5	cis-1,3-Dichloropropene	10 U	
79-01-6	Trichloroethene	10 U	
124-48-1	Dibromochloromethane	10 U	
79-00-5	1,1,2-Trichloroethane	10 U	
71-43-2	Benzene	10 U	
10061-02-6	trans-1,3-Dichloropropene	10 U	
75-25-2	Bromoform	10 U	
108-10-1	4-Methyl-2-Pentanone	10 U	
591-78-6	2-Hexanone	10 U	
127-18-4	Tetrachloroethene	10 U	
79-34-5	1,1,2,2-Tetrachloroethane	10 U	
108-88-3	Toluene	10 U	
108-90-7	Chlorobenzene	10 U	
100-41-4	Ethylbenzene	10 U	
100-42-5	Styrene	10 U	
1330-20-7	Xylene (Total)	10 U	

1D  
HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T15101294

Lab Name: COMPUCHEM, RTP

Contract:

Lab Code: COMPU Case No.: 29274 SAS No.:

SDG No.: 00353

PT 15  
Oct. 1994

Matrix: (soil/water) WATER

Lab Sample ID: 647650

Sample wt/vol: 5.0 (g/ml) ML

Date Received: 10/12/94

% Moisture: decanted: (Y/N)

Date Analyzed: 10/17/94

Dilution Factor: 1 pH:

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	0.50	U
75-01-4-----	Vinyl Chloride	0.55	U
74-83-9-----	Bromomethane	0.26	J
75-00-3-----	Chloroethane	0.090	J
75-35-4-----	1,1-Dichloroethene	0.35	U
75-09-2-----	Methylene Chloride	1.3	B
156-60-5-----	t-1,2-Dichloroethene	0.30	U
75-34-3-----	1,1-Dichloroethane	0.35	U
67-66-3-----	Chloroform	18	E
74-97-5-----	Bromochloromethane	0.25	U
71-55-6-----	1,1,1-Trichloroethane	1.2	
56-23-5-----	Carbon Tetrachloride	0.35	U
107-06-2-----	1,2-Dichloroethane	0.25	U
79-01-6-----	Trichloroethene	0.30	U
78-87-5-----	1,2-Dichloropropane	0.30	U
75-27-4-----	Bromodichloromethane	0.40	U
74-95-3-----	Dibromomethane	0.40	U
110-75-8-----	2-CEVE	0.40	U
10061-01-5-----	c-1,3-Dichloropropene	0.30	U
10061-02-6-----	t-1,3-Dichloropropene	0.25	U
79-00-5-----	1,1,2-Trichloroethane	0.25	U
127-18-4-----	Tetrachloroethene	2.3	
124-48-1-----	Dibromochloromethane	0.30	U
106-93-4-----	1,2-Dibromoethane	0.35	U
108-90-7-----	Chlorobenzene	0.35	U
630-20-6-----	1,1,1,2-Tetrachloroethane	0.35	U
75-25-2-----	Bromoform	0.50	U
79-34-5-----	1,1,2,2-TCA	0.40	U
96-18-4-----	1,2,3-Trichloropropane	0.35	U
108-86-1-----	Bromobenzene	0.85	U
95-49-8-----	2-Chlorotoluene	0.25	U
106-43-4-----	4-Chlorotoluene	0.35	U
541-73-1-----	1,3-Dichlorobenzene	0.20	U
106-46-7-----	1,4-Dichlorobenzene	0.20	U
95-50-1-----	1,2-Dichlorobenzene	0.30	U

1D  
HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T15101294DL

Lab Name: COMPUCHEM, RTP

Contract:

Lab Code: COMPU Case No.: 29274 SAS No.:

SDG No.: 00353

PT15  
Oct. 1990

Matrix: (soil/water) WATER

Lab Sample ID: 647650 R1

Sample wt/vol: 2.5 (g/ml) ML

Date Received: 10/12/94

% Moisture: decanted: (Y/N)

Date Analyzed: 10/20/94

Dilution Factor: 2 pH:

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	1.0	U
75-01-4-----	Vinyl Chloride	1.1	U
74-83-9-----	Bromomethane	0.90	U
75-00-3-----	Chloroethane	1.0	U
75-35-4-----	1,1-Dichloroethene	0.70	U
75-09-2-----	Methylene Chloride	6.9	BD
156-60-5-----	1,2-Dichloroethene	0.60	U
75-34-3-----	1,1-Dichloroethane	0.027	JD
67-66-3-----	Chloroform	14	BD
74-97-5-----	Bromochloromethane	0.87	D
71-55-6-----	1,1,1-Trichloroethane	0.020	JD
56-23-5-----	Carbon Tetrachloride	0.70	U
107-06-2-----	1,2-Dichloroethane	0.50	U
79-01-6-----	Trichloroethene	0.026	JD
78-87-5-----	1,2-Dichloropropane	0.60	U
75-27-4-----	Bromodichloromethane	0.80	U
74-95-3-----	Dibromomethane	0.80	U
110-75-8-----	2-CEVE	0.80	U
10061-01-5-----	c-1,3-Dichloropropene	0.60	U
10061-02-6-----	t-1,3-Dichloropropene	0.50	U
79-00-5-----	1,1,2-Trichloroethane	0.50	U
127-18-4-----	Tetrachloroethene	0.16	JD
124-48-1-----	Dibromochloromethane	0.60	U
106-93-4-----	1,2-Dibromoethane	0.70	U
108-90-7-----	Chlorobenzene	0.70	U
630-20-6-----	1,1,1,2-Tetrachloroethane	0.70	U
75-25-2-----	Bromoform	1.0	U
79-34-5-----	1,1,2,2-TCA	0.80	U
96-18-4-----	1,2,3-Trichloropropane	0.70	U
108-86-1-----	Bromobenzene	1.7	U
95-49-8-----	2-Chlorotoluene	0.50	U
106-43-4-----	4-Chlorotoluene	0.70	U
541-73-1-----	1,3-Dichlorobenzene	0.40	U
106-46-7-----	1,4-Dichlorobenzene	0.40	U
95-50-1-----	1,2-Dichlorobenzene	0.085	JBD

1D  
AROMATIC VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T15101294

Lab Name: COMPUCHEM, RTP

Contract:

Lab Code: COMPU Case No.: 29274 SAS No.:

SDG No.: 00353

*PT15*  
*Oct. 1994*

Matrix: (soil/water) WATER

Lab Sample ID: 647650

Sample wt/vol: 5.0 (g/ml) ML

Date Received: 10/12/94

% Moisture: decanted: (Y/N)

Date Analyzed: 10/17/94

Dilution Factor: 1 pH:

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Methyl-t-butyl ether	5.0	U
71-43-2-----	Benzene	0.11	JPB
108-88-3-----	Toluene	0.37	PB
108-90-7-----	Chlorobenzene	0.25	U
100-41-4-----	Ethylbenzene	0.12	JP
106-42-3-----	1,4-Dimethylbenzene	0.090	JPB
108-38-3-----	1,3-Dimethylbenzene	0.21	JPB
95-47-6-----	1,2-Dimethylbenzene	0.24	PB
100-42-5-----	Styrene	0.25	U
541-73-1-----	1,3-Dichlorobenzene	0.20	U
106-46-7-----	1,4-Dichlorobenzene	0.15	U
95-50-1-----	1,2-Dichlorobenzene	0.086	JPB

*✓ good*  
*11-16*

1D  
HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

PT150595

Lab Name: COMPUCHEM, RTP

Contract:

Lab Code: COMPU Case No.: 30674 SAS No.:SDG No.: 00147PT15  
June 1995Matrix: (soil/water) WATERLab Sample ID: 723241Sample wt/vol: 5.0 (g/ml) MLDate Received: 05/25/95

% Moisture: decanted: (Y/N)

Date Analyzed: 06/01/95Dilution Factor: 1 pH:

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

CAS NO. COMPOUND

74-87-3	-----Chloromethane	0.50	U
75-01-4	-----Vinyl Chloride	0.55	U
74-83-9	-----Bromomethane	0.45	U
75-00-3	-----Chloroethane	0.50	U
75-35-4	-----1,1-Dichloroethene	0.35	U
75-09-2	-----Methylene Chloride	1.0	U
156-60-5	-----1,2-Dichloroethene	0.30	U
75-34-3	-----1,1-Dichloroethane	0.35	U
67-66-3	-----Chloroform	2.1	P
74-97-5	-----Bromochloromethane	0.25	U
71-55-6	-----1,1,1-Trichloroethane	0.35	U
56-23-5	-----Carbon Tetrachloride	0.35	U
107-06-2	-----1,2-Dichloroethane	0.25	U
79-01-6	-----Trichloroethene	0.33	P
78-87-5	-----1,2-Dichloropropane	0.30	U
75-27-4	-----Bromodichloromethane	0.40	U
74-95-3	-----Dibromomethane	0.40	U
110-75-8	-----2-CEVE	0.40	U
10061-01-5	-----c-1,3-Dichloropropene	0.30	U
10061-02-6	-----t-1,3-Dichloropropene	0.25	U
79-00-5	-----1,1,2-Trichloroethane	0.25	U
127-18-4	-----Tetrachloroethene	0.30	U
124-48-1	-----Dibromochloromethane	0.30	U
106-93-4	-----1,2-Dibromoethane	0.35	U
108-90-7	-----Chlorobenzene	0.35	U
630-20-6	-----1,1,1,2-Tetrachloroethane	0.35	U
75-25-2	-----Bromoform	0.50	U
79-34-5	-----1,1,2,2-TCA	0.40	U
96-18-4	-----1,2,3-Trichloropropane	0.35	U
108-86-1	-----Bromobenzene	0.85	U
95-49-8	-----2-Chlorotoluene	0.25	U
106-43-4	-----4-Chlorotoluene	0.35	U
541-73-1	-----1,3-Dichlorobenzene	0.20	U
106-46-7	-----1,4-Dichlorobenzene	0.20	U
95-50-1	-----1,2-Dichlorobenzene	0.30	U



1D  
AROMATIC VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

PT150595

Lab Name: COMPUCHEM, RTP

Contract:

Lab Code: COMPU Case No.: 30674 SAS No.:SDG No.: 00147PT15  
June 1995Matrix: (soil/water) WATERLab Sample ID: 723241Sample wt/vol: 5.0 (g/ml) MLDate Received: 05/25/95

% Moisture: decanted: (Y/N)

Date Analyzed: 06/02/95Dilution Factor: 1 pH:

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Methyl-t-butyl ether	5.0	U
71-43-2-----	Benzene	0.35	U
108-88-3-----	Toluene	0.25	U
108-90-7-----	Chlorobenzene	0.25	U
100-41-4-----	Ethylbenzene	0.20	U
99-99-9-----	1,3/1,4-Dimethylbenzene	0.50	U
95-47-6-----	1,2-Dimethylbenzene	0.20	U
100-42-5-----	Styrene	0.25	U
541-73-1-----	1,3-Dichlorobenzene	0.20	U
106-46-7-----	1,4-Dichlorobenzene	0.15	U
95-50-1-----	1,2-Dichlorobenzene	0.15	U

**SOIL TCLP ANALYTICAL**

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

V3-TCLP

Lab Name: COMPUCHEM ENV. CORP.

Contract: 500712

Lab Code: COMPU

Case No.: 30674

SAS No.:

SDG No.: 00138

Matrix: (soil/water) WATER

Lab Sample ID: 719145

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: CN019145B52.D

Level: (low/med) LOW

Date Received: 05/17/95

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/03/95

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: \_\_\_\_\_ (uL)

Soil Aliquot Volume: \_\_\_\_\_ (uL)

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3	-----Chloromethane	15	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	8	J
67-64-1	-----Acetone	43	
75-15-0	-----Carbon Disulfide	10	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
540-59-0	-----1,2-Dichloroethene (total)	10	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	20	U
71-55-6	-----1,1,1-Trichloroethane	10	U
56-23-5	-----Carbon Tetrachloride	10	U
75-27-4	-----Bromodichloromethane	10	U
78-87-5	-----1,2-Dichloropropane	10	U
10061-01-5	-----cis-1,3-Dichloropropene	15	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	10	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	10	U
10061-02-6	-----trans-1,3-Dichloropropene	10	U
75-25-2	-----Bromoform	10	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	15	U
127-18-4	-----Tetrachloroethene	10	U
79-34-5	-----1,1,2,2-Tetrachloroethane	10	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	10	U
100-41-4	-----Ethylbenzene	10	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Xylene (total)	15	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

V4-TCLP

Lab Name: COMPUCHEM ENV. CORP.

Contract: 500712

Lab Code: COMPU

Case No.: 30674 · SAS No.:

SDG No.: 00138

Matrix: (soil/water) WATER

Lab Sample ID: 719151

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: CN019151B52.D

Level: (low/med) LOW

Date Received: 05/17/95

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/03/95

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: \_\_\_\_\_ (uL)

Soil Aliquot Volume: \_\_\_\_\_ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

107-02-8-----	Acrolein	90	U
354-58-5-----	1,1,1-trichloro-2,2,2-triflu	15	U
75-69-4-----	Trichlorofluormethane	10	U
76-13-1-----	1,1,2-Trichloro-1,2,2-triflu	25	U
74-88-4-----	Iodomethane	5	U
107-05-1-----	3-Chloropropene	15	U
75-05-8-----	Acetonitrile	60	U
107-13-1-----	Acrylonitrile	95	U
108-05-4-----	Vinyl Acetate	10	U
107-12-0-----	Propionitrile (Ethyl Cyanide	220	U
126-98-7-----	Methacrylonitrile	20	U
4170-30-3-----	Crotonaldehyde	300	U
78-83-1-----	Isobutyl Alcohol	2800	U
74-95-3-----	Dibromomethane	10	U
80-62-6-----	Methyl Methacrylate	20	U
123-91-1-----	1,4-Dioxane	3700	U
110-75-8-----	2-Chloroethyl Vinyl Ether	10	U
97-63-2-----	Ethyl Methacrylate	10	U
106-93-4-----	1,2-Dibromoethane	10	U
630-20-6-----	1,1,1,2-Tetrachloroethane	10	U
1476-11-5-----	Cis-1,4-Dichloro-2-Butene	5	U
96-18-4-----	1,2,3-Trichloropropane	10	U
110-57-6-----	Trans-1,4-Dichloro-2-Butene	10	U
96-12-8-----	1,2-Dibromo-3-Chloropropane	10	U
541-73-1-----	1,3-Dichlorobenzene	10	U
106-46-7-----	1,4-Dichlorobenzene	10	U
95-50-1-----	1,2-Dichlorobenzene	10	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

V4-TCLP

Lab Name: COMPUCHEM ENV. CORP. Contract: 500712  
 Lab Code: COMPU Case No.: 30674 SAS No.: SDG No.: 00138  
 Matrix: (soil/water) WATER Lab Sample ID: 719151  
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: CN019151B52.D  
 Level: (low/med) LOW Date Received: 05/17/95  
 % Moisture: not dec. Date Analyzed: 06/03/95  
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0  
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3	Chloromethane	15	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	
67-64-1	Acetone	45	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	15	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	15	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	15	U

**APPENDIX G:    APPLICABLE OR RELEVANT AND  
APPROPRIATE REQUIREMENTS**

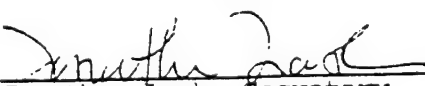
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**STATE OF VERMONT**

- **1988 GROUNDWATER QUALITY STANDARDS**
  - **1992 RESIDUAL SOIL VALUES**  
(Equal to Groundwater Quality  
Enforcement Standards for  
Organics times 20)
-

STATE OF VERMONT  
Agency of Natural Resources  
Department of Environmental Conservation

Chapter 12  
GROUND WATER PROTECTION RULE AND STRATEGY

Rule Number: 88-37 Effective Date: September 29, 1988  
Adopted:  Date: 9/8/88  
Jonathan Lash, Secretary

099/1100/GW2



TABLE 1

## Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
Acifluorfen	9.0	0.9 (10%)
Acrylamide	0.01	0.001 (10%)
Alachlor	0.50	0.05 (10%)
Aldicarb	10.0	5.0 (50%)
Aldicarb Sulfoxide	10.0	5.0 (50%)
Aldicarb Sulfone	10.0	5.0 (50%)
Aldicarb Sulfone*	42.0	21.0 (50%)
Ametryn	60.0	30.0 (50%)
Arsenic	50.0	25.0 (50%)
Ammonium Sulfamate	1.5 milligrams/liter (mg/l)	0.75 mg/l (50%)
Atrazine	3.0	0.3 (10%)
Bacteria Total Coliform	Less than one in 100 ml for membrane filter method or not present in any 10 ml portion by fermentation tube method for both preventive action limit and enforcement standard	
Barium	1.0 mg/l	0.50 mg/l (50%)
Baygon	3.0	0.30 (10%)
Bentazon	17.5	8.75 (50%)
Benzene	5.0	0.5 (10%)
Bromacil	80.0	8.0 (10%)
Butylate	50.0	5.0 (10%)
Cadmium	5.0	2.5 (50%)
Carbaryl	700.0	350.0 (50%)

\*Value to be used in cases where other Aldicarb substances are not detected.

TABLE 1 (Cont'd)

## Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
Carbofuran	36.0	18.0 (50%)
Carbon Tetrachloride	5.0	0.5 (10%)
Carboxin	700.0	350.0 (50%)
Chloramben	105.0	52.5 (50%)
Chlordane	0.027	0.0027 (10%)
Chlorobenzene	100.0	50.0 (50%)
Chlorothalonil	1.5	0.15 (10%)
Chromium	50.0	25.0 (50%)
Cyanazine	9.0	4.5 (50%)
Cyanide	154.0	77.0 (50%)
Dacthal	3.5 mg/l	1.75 mg/l (50%)
Dalapon	560.0	280.0 (50%)
Diazinon	0.63	0.31 (50%)
1,2-Dibromoethane	0.01	0.001 (10%)
1,2-Dibromo-3-Chloropropane	0.025	0.0025 (10%)
Dicamba	9.0	4.5 (50%)
o-,m-Dichlorobenzene	620.0	310.0 (50%)
p-Dichlorobenzene	75.0	7.5 (10%)
1,2-Dichloroethane	5.0	0.5 (10%)
1,1-Dichloroethene	7.0	0.7 (10%)
Cis-1,2-Dichloroethene	70.0	35.0 (50%)
Trans-1,2-Dichloroethene	70.0	35.0 (50%)
Dichloromethane	5.0	0.5 (10%)

TABLE 1 (Cont'd)

## Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
2,4 D	70.0	35.0 (50%)
1,2-Dichloropropane	0.56	0.056 (10%)
1,3-Dichloropropene	0.2	0.02 (10%)
Dieldrin	0.002	0.0002 (10%)
Dimethrin	2.1 mg/l	1.05 mg/l (50%)
Dinoseb	7.0	3.5 (50%)
p-Dioxane	7.0	0.7 (10%)
2,3,7,8-TCDD	2.2E-7	2.2E-8 (10%)
Diphenamid	200.0	100.0 (50%)
Disulfoton	0.30	0.15 (50%)
Diuron	14.0	7.0 (50%)
Endothall	140.0	70.0 (50%)
Endrin	0.32	0.16 (50%)
Epichlorohydrin	0.28	0.028 (10%)
Ethylbenzene	680.0	340.0 (50%)
Ethylene Glycol	7.0 mg/l	3.5 mg/l (50%)
Ethylene Dibromide	0.0005	0.00005 (10%)
Ethylene thiourea	0.25	0.025 (10%)
Fenamiphos	1.8	0.9 (50%)
Fluometuron	90.0	45.0 (50%)
Fonofos	14.0	7.0 (50%)
Glyphosate	700.0	350.0 (50%)
Heptachlor	0.076	0.0076 (10%)

TABLE 1 (Cont'd)

## Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
Heptachlor epoxide	0.038	0.0038 (10%)
Hexachlorobenzene	0.02	0.002 (10%)
n-Hexane	4.0 mg/l	2.0 mg/l (50%)
Hexazinone	210.0	105.0 (50%)
Lead	20.0	10.0 (50%)
Lindane	0.2	0.02 (10%)
Maleic Hydrazide	3.5 mg/l	1.75 mg/l (50%)
MCPA	3.6	1.8 (50%)
Mercury	2.0	1.0 (50%)
Methomyl	175.0	87.5 (50%)
Methoxychlor	340.0	170.0 (50%)
Methylene Chloride	5.0	2.5 (50%)
Methyl Ethyl Ketone	170.0	85.0 (50%)
Methyl Parathion	2.0	1.0 (50%)
Metolachlor	10.0	1.0 (10%)
Metribuzin	175.0	87.5 (50%)
Nickel	350.0	175.0 (50%)
Nitrate/Nitrite	10 mg/l / 1 mg/l	5 mg/l / 0.5 mg/l (50%)
Oxamyl	175.0	87.5 (50%)
Paraquat	3.0	0.3 (10%)
Pentachlorophenol	220.0	110.0 (50%)
PCBs	0.008	0.0008 (10%)
Picloram	490.0	245.0 (50%)
Prometon	100.0	50.0 (50%)

TABLE 1 (Cont'd)

## Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter- except as noted)	Preventive Action Limit (micrograms per liter- except as noted)
Pronamide	52.0	5.2 (10%)
Propachlor	92.0	46.0 (50%)
Propazine	14.0	7.0 (50%)
Propham	120.0	60.0 (50%)
Silver	50.0	25.0 (50%)
Simazine	35.0	17.5 (50%)
Styrene	5.0	0.5 (10%)
Tebuthiuron	35.0	3.5 (10%)
Terbacil	90.0	45.0 (50%)
Terbufos	0.18	0.09 (50%)
Tetrachloroethene	0.70	0.07 (10%)
Toluene	2.42 mg/l	1.21 mg/l (50%)
Toxaphene	0.031	0.0031 (10%)
1,1,1-Trichloroethane	200.0	100.0 (50%)
Trichloroethene	5.0	0.5 (10%)
Trifluralin	1.7	0.17 (10%)
2,4,5-T	21.0	10.5 (50%)
2,4,5-TP	10.0	5.0 (50%)
Vinyl chloride	2.0	0.2 (10%)
Xylenes	400.0	200.0 (50%)

§12-703 Secondary Ground Water Quality Standards

- (1) The Secretary, in cooperation with the Commissioners of Agriculture and Health, hereby adopts and may make additions or changes by rule to, the Secondary Ground Water Quality Standards upon consideration of available water quality standards information as published by the USEPA or the Vermont Department of Health.

TABLE 2

Note: For each substance in Table 2 the preventive action limit is 50% of the enforcement standard.

Substance	Enforcement Standard (milligrams per liter- except as noted)	Preventive Action Limit (milligrams per liter- except as noted)
Chloride	250	125
Color	15 color units	7.5 color units
Copper	1.0	.5
Foaming Agents MBAS (Methylene-Blue Active Substances)	.5	.25
Iron	.3	.15
Manganese	.05	.025
Odor	3 (Threshold Odor No.)	1.5 (Threshold Odor No.)
Sulfate	250	125
Total Dissolved Solids (TDS)	500	250
Zinc	5	2.5

# DRAFT

Revised: June 29, 1992

## Vermont Department of Environmental Conservation Hazardous Materials Management Division

### Interim Soil Cleanup Guidance

#### Objective

This guidance is intended to provide cleanup levels for contaminated soils below which residual contaminants are deemed not to pose a threat to groundwater quality. These concentrations are currently being used by the Sites Management Section to establish target levels for soil remediation at sites contaminated with hazardous substances from a source other than virgin petroleum products from an underground storage tank (UST). Guidance for soils contaminated with virgin petroleum products from an UST is covered by the attached "Interim Soil Guideline Levels and Treatment Options".

Contaminated soils pose a risk through several avenues as summarized below:

- they may leach contaminants into groundwater resulting in groundwater contamination;
- contaminated groundwater may in turn discharge to surface water;
- they may be carried by surface runoff into surface waters;
- they may present a risk to human health through direct contact with the contaminated soil or ingestion of the soil;
- contaminants may volatilize from the soil, or particles of contaminated soil may be carried into the air, resulting in air pollution.

It is difficult to determine allowable levels of contaminants in soils that are protective of human health and the environment considering each of the possible exposure routes listed above. Of the exposure routes cited above, one of the most significant is the contamination of groundwater through leaching of contaminants from contaminated soils. This guidance will develop cleanup levels for contamination in soil that are protective of groundwater quality. Other exposure routes will be addressed on a site specific basis.

#### Background

A number of different regulations, and operating procedures influence the development of soils cleanup guidance. One of the major determining factors is the source of the contamination. The source can determine whether the contaminated soil would be classified as a hazardous waste. A soil could be classified as a hazardous waste under either the Federal Resource Conservation and Recovery Act regulations (RCRA) or the Vermont Hazardous Waste Management regulations.

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2

#### Determination of Hazardous Waste:

To be defined as a hazardous waste, contaminated soil must exhibit one of the following characteristics which define a waste as hazardous or meet one of the following criteria:

- 1) Ignitability Characteristic;
- 2) Corrosivity Characteristic;
- 3) Reactivity Characteristic;
- 4) Toxicity Characteristic (as determined by analytical results of Toxicity Characteristic Leaching Procedure analysis of a soil sample)
- 5) Soil contamination is due to a release of a chemical product, discarded chemical product or off specification chemical product which is considered to be an acute hazardous waste or toxic waste;
- 6) Soil contamination is due to a release of a specifically listed waste.

#### Land Disposal Restrictions:

The Land Disposal Restrictions (Land Ban) apply only to wastes that are classified as hazardous waste by RCRA definition as described above. Hazardous substances can be present in a waste or contaminated soil without that waste or soil meeting the RCRA definition of hazardous.

The Land Ban establishes contaminant concentrations in waste or in a waste extract above which land disposal is not allowed. These numbers apply only to RCRA hazardous wastes or soils contaminated with a RCRA hazardous waste. Regardless of the concentration of a given constituent, Land Ban does not apply to wastes not meeting the RCRA definition of hazardous. The key to knowing whether Land Ban applies in a given instance is whether the contaminated soil would be classified as hazardous waste under RCRA.

If Land Ban applies in a particular case, the soil in question cannot be land disposed unless the soil is treated so that contaminants are reduced to less than the regulatory level. Following treatment, this soil could be disposed at a RCRA Subtitle D facility.

Two different types of analyses are available for determining the levels of contaminants in a soil. One type measures the total concentration of contaminants present in a soil. The other type of test is a leaching test designed to measure the amount of a given contaminant that could be expected to be leached out of a soil and contribute to groundwater contamination. The most common test of this type currently in use in the Toxicity Characteristic Leaching Procedure or TCLP. One of the uses for this test is to determine if a particular waste meets the definition of a hazardous waste for the toxicity characteristic. This guidance provides for the use of either of these tests.

#### Potential for Groundwater Contamination:

When assessing the potential for soil contamination to impact groundwater, cleanup levels will be based upon the Enforcement Standards in the Groundwater Protection Rule and Strategy. There are two methods of



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analysis which can be used to determine the appropriate cleanup level:

1) TCLP Analysis

Analyzing soils by TCLP analysis provides results with the greatest degree of confidence. In this case, if a TCLP analysis indicates the presence of any compound at a level in excess of the Enforcement Standard in the Groundwater Protection Rule and Strategy, the cleanup level will be considered to be exceeded.

2) Total Dry Weight Analysis

In a typical site assessment, soils analyses will often be done for total contaminant concentration (based on either dry weight or wet weight). In order to be able to use this type of data to assess whether a cleanup level is exceeded, a second option is to use total contaminant concentration by dry weight to calculate the highest possible TCLP results that could be obtained from that sample. To do this, make the conservative assumption that 100% of the total dry weight concentration of a contaminant will leach out of the soil and divide that concentration by 20 to simulate the 20 times dilution factor in the TCLP method.

Example:

A soil is analyzed for total volatile organic chemicals and results in a dry weight concentration of 800 ppb of trichloroethene (TCE). Assuming that 100% of the TCE leaches from the soil, the result is 800 ppb divided by 20 for a final result of 40 ppb. Since the Enforcement Standard for TCE is 5 ppb the cleanup level would be assumed to be exceeded.

This method is conservative by assuming 100% of the contaminant will leach, so it provides maximum protection. There is always the option to actually do a TCLP analysis and determine the actual concentration in the extract.

These cleanup levels are meant to be a guide to help determine whether soil remediation is necessary and to provide target levels for soil treatment actions. The need for further investigation and remediation, and the decision of what further work is appropriate will be determined on a site specific basis.

Note:

Option (2) is a reasonable approach when applied to non-naturally occurring organic contaminants. Problems may be encountered when applying this option to contaminants that are naturally occurring inorganic elements. Therefore, in general, option (1) should be used when dealing with these naturally occurring inorganics.

Direct Contact, Inhalation and Ingestion Threats:

Soil contamination may pose a threat through one of the above avenues regardless of whether it presents a threat to groundwater. These threats will be assessed by comparing the total amount of contaminant on a dry weight basis to numerical guidelines for levels of contaminants deemed to pose a risk

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through these pathways. Assessment will be on a site specific basis and will take into account both contaminant concentrations and the likelihood of exposure.

## Implementation

The guidance outlined above will be used to assess the significance of data from soil sampling at sites in Vermont. Levels of contaminants in soil will be compared to cleanup levels to aid in determining the need for remediation at a particular site and to provide target levels for soil treatment actions.

Contaminated soil that meets the definition of hazardous waste must be handled according to the Vermont Hazardous Waste Management Regulations. These soils may also be subject to the Land Disposal Regulations. Such soils may be shipped as hazardous waste to an appropriate treatment or disposal facility or they may be treated on-site prior to shipment to an appropriate facility. In the case of soils that are subject to the Land Disposal Regulations, on-site treatment may increase options for final disposition of the soil. Any on-site treatment of soils defined as hazardous waste must be in accordance with Federal and State regulations and with Hazardous Materials Management Division policy for on-site remediation of soils and groundwater.

If a soil does not meet the definition of a hazardous waste but does exceed the cleanup level for groundwater protection, or is deemed to present a potential direct contact threat, soil remediation may be required. Remedial measures for a threat to groundwater quality could include soil removal or on-site treatment of soil to a level where a threat to groundwater no longer exists. A direct contact threat could be addressed by capping or other means to minimize the direct contact potential. In addition to these measures, institutional controls may also be required.

Several options exist for contaminated soils that exceed a cleanup level, but are not classified as hazardous waste: on-site treatment and disposal, removal and disposal at a certified solid waste landfill that will accept such soils or disposal at a certified hazardous waste disposal facility. If remedial efforts result in residual contamination below action levels present in the soil, final disposition of the soil on-site must be carried out so that potential for direct contact with the soils is minimized. In situations where contaminated soils remain onsite, institutional controls may be required.

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**APPENDIX H:    LABORATORY ANALYTICAL DATA  
                    QUALITY**

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## APPENDIX H: DATA QUALITY ASSESSMENT

### H.1 INTRODUCTION

A standardized Quality Assurance/Quality Control (QA/QC) program was followed during the Abbreviated Site Investigation (ASI) at the 158th Fighter Wing, Vermont Air National Guard (ANG) to ensure that analytical results accurately represent the environmental conditions at the sites. The ASI was conducted using the Hazardous Waste Remedial Actions Program (HAZWRAP) Level C (i.e., U.S. Environmental Protection Agency (EPA) Level III) QC requirements described in Requirements For Quality Control Of Analytical Data (DOE/HWP-65/R2, 1995) and the guidelines and specifications described in the ASI Work Plan.

The number of environmental and field QC samples (i.e., trip blanks, field blanks, equipment rinseates, and field replicates) collected and analyzed are summarized in Table H-1. The QC checks and results are summarized below.

### H.2 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) are qualitative and quantitative statements developed by data users to specify the quality of data obtained from field and laboratory data collection activities to support specific decisions or regulatory actions. DQOs also establish numeric limits for the data to allow the data user to determine if the data collected are of sufficient quality for use in their intended application. The data collected during the ASI field effort will be used to (1) confirm the presence or absence of suspected contamination at the identified sites and (2) evaluate the human health or environmental implications. DQOs were established for precision, accuracy, representativeness, completeness, and comparability (PARCC). The following sections summarize the DQOs established for the PARCC parameters and the levels of agreement obtained during the ASI.

**Table H-1 Summary of Analytical Program**  
**158th Fighter Wing, Vermont ANG, Burlington Vermont**

Sample Source	VOC	SVOC	CLP Metals <sup>2</sup>	TPH
Soil	30	30	30	30
Sediment	3	3	3	3
Surface Water	1	1	2	1
Groundwater	6	6	12	6
Total	40	40	47	30
Field Duplicates	4 <sup>Soil</sup> 1 <sup>Sediment</sup> 1 <sup>Surface Water</sup> 1 <sup>Groundwater</sup>	4 1 1 1	4 1 2 2	4 1 1 1
Equipment Rinseates	7	7	7	7
Field Blanks	4	4	4	4
Trip Blanks	12			

**NOTES:**

1. VOC analyses performed using SW-846 8010/8020. Second column confirmation was performed for those samples containing compounds greater than quantitation level.
2. Filtered and unfiltered water samples were collected.

### H.2.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Precision is expressed quantitatively as the measure of the variability of a group of measurements compared to their average value. The closer the numerical value the measurements are to each other, the more precise the measurement. Precision was defined as the reproducibility, or degree of agreement, among replicate measurements of the same quantity. Precision was expressed as the percentage of the difference between results of duplicate samples for a given compound or element. Relative percent difference (RPD) was calculated as:

$$RPD = \frac{Abs(C_1 - C_2)}{\frac{C_1 + C_2}{2}} \times 100$$

Where;  $C_1$  = Concentration of the analyte in the sample  
 $C_2$  = Concentration of the analyte in the duplicate/replicate.

The RPD was then compared to established limits to determine the level of precision achieved. For this project overall precision was comprised of analytical and sampling precision. The objectives for analytical precision, sampling precision, and overall precision are to have 90% of the values calculated within the specified RPD range.

Analytical precision refers to the ability of the laboratory to reproduce measurements of a sample concentration. Analytical precision was assessed through the use of analytical replicate samples. Precision was determined using Matrix Spike/Matrix Spike Duplicate (MS/MSD) and duplicate sample analyses conducted on samples collected for volatile organic compound (VOC), semi-volatile organic compound (SVOC), target analyte list (TAL) metals, and total petroleum hydrocarbons (TPH) analysis during the ASI. The laboratory selected one sample in 20 and split the sample into two aliquots, to be used for MS/MSD analysis. MS/MSD samples were prepared by routinely screening the first aliquot for the parameters of interest before analysis, while the remaining aliquot was spiked with known quantities of parameters of interest and analyzed twice. The RPD between the spike results was calculated and used as an indication of the analytical precision for the VOC, SVOC, and TPH analyses performed. Duplicate samples for TAL metals analyses were prepared by subdividing one sample of every 20 samples received and analyzing both samples of the duplicate pair. The RPD between the two sample concentrations was calculated and used as an indication of the analytical precision for the analyses performed.

Fourteen of the 94 water, and three of the 188 soil RPD values calculated from the VOC analyses exceeded control limits for analytical precision. Control limits for VOC MS/MSD are detailed in Tables H-2 and H-3. Two of the 30 water, and eight of the 44 soil RPD values calculated for the SVOC analyses exceeded control limits for analytical precision. Control limits for SVOC MS/MSD are detailed in Tables H-4 and H-5. Nine of 76 water, and 12 of 93 soil RPD values calculated from the TAL metals analyses were outside advisory control limits of  $\pm 20\%$ . Control limits for metals MS/MSD are detailed in Tables H-6 and H-7. None of the four water, and two of the 10 soil RPD values calculated from the TPH analyses exceeded

**TABLE H-2 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD VOLATILE ORGANIC COMPOUNDS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy				Precision					
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
8010										
Bromodichloromethane	4	88-110	42-172	4	0	2	8-20	20	2	0
Bromobenzene	4	81-109	8-184	4	0	2	4-9	20	2	0
Bromoform	4	106-138	13-159	4	0	2	5-14	20	2	0
Bromomethane	4	94-106	1-144	4	0	2	0-12	20	2	0
Bromochloromethane	4	84-111	49-133	4	0	2	7-8	20	2	0
Carbon tetrachloride	4	84-138	43-143	4	0	2	17-24	20	1	1
2-Chloroethylvinyl eter	4	0	14-186	0	4	2	0	20	2	0
Chloroethane	4	113-131	46-137	4	0	2	10-15	20	2	0
Chloroform	4	90-114	49-133	4	0	2	11-15	20	2	0
Cholorbenzene	4	91-125	38-150	4	0	2	12-31	20	1	1
Chloromethane	4	94-138	1-193	4	0	2	18-32	20	1	1
2-Chlorotoluene	4	90-115	8-184	4	0	2	7-8	20	2	0
4-Chlorotoluene	4	85-118	8-184	4	0	2	5-11	20	2	0
1,2-Dibromoethane	4	104-110	24-191	4	0	2	1-6	20	2	0
Dibromochloromethane	4	86-111	24-191	4	0	2	1-19	20	2	0

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**TABLE H-2 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD VOLATILE ORGANIC COMPOUNDS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
8010										
Dibromomethane	4	86-116	42-172	4	0	2	9-11	20	2	0
1,2-Dichlorobenzene	4	90-118	1-208	4	0	2	12-14	20	2	0
1,3-Dichlorobenzene	4	91-113	7-187	4	0	2	11-14	20	2	0
1,4-Dichlorobenzene	4	86-118	42-143	4	0	2	11-12	20	2	0
1,1-Dichloroethane	4	83-119	47-132	4	0	2	23-26	20	0	2
1,2-Dichloroethane	4	85-115	51-147	4	0	2	9-17	20	2	0
1,1-Dichloroethene	4	57-138	28-167	4	0	2	15-19	20	2	0
trans-1,2-Dichloroethene	4	83-125	38-155	4	0	2	17-22	20	1	1
1,2-Dichloropropane	4	84-118	44-156	4	0	2	12-17	20	2	0
cis-1,3,Dichloropropene	4	86-105	22-178	4	0	2	5-16	20	2	0
trans-1,3,-Dichloropropene	4	92-109	22-178	4	0	2	3-17	20	2	0
Methylene Chloride	4	40-143	25-162	4	0	2	0-60	20	1	1
1,1,2,2-Trichloroethane	4	91-115	8-184	4	0	2	3-23	20	1	1



**TABLE H-2 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD VOLATILE ORGANIC COMPOUNDS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
1,1,1,2-Tetrachloroethane 8010	4	90-108	38-150	4	0	2	5-8	20	2	0
Tetrachloroethene	4	88-125	26-162	4	0	2	0-18	20	2	0
1,1,1-Trichloroethane	4	86-138	41-138	4	0	2	15-19	20	2	0
1,1,2-Trichloroethane	4	86-108	39-136	4	0	2	4-19	20	2	0
Trichloroethene	4	85-125	35-146	4	0	2	16-17	20	2	0
1,2,3,-Trichloropropane	4	91-111	8-184	4	0	2	0-9	20	2	0
Vinyl Chloride 8020	4	106-150	26-163	4	0	2	16-34	20	2	0
Benzene	4	66-120	39-150	4	0	2	1-32	20	1	1
Ethyl benzene	4	50-89	32-160	4	0	2	12-40	20	1	1
Chlorobenzene	4	88-104	55-135	4	0	2	0-16	20	2	0
Methyl-tert-butyl-ether	4	65-84	39-150	4	0	2	6-21	20	1	1
Styrene	4	81-95	32-160	4	0	2	8	20	2	0
Toluene	4	83-104	46-148	4	0	2	7-11	20	2	0

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**TABLE H-2 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD VOLATILE ORGANIC COMPOUNDS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
1,4-Dimethylbenzene	4	38-93	32-160	4	0	2	6-58	20	1	1
1,3-Dimethylbenzene	4	38-93	32-160	4	0	2	6-58	20	1	1
<b>8020</b>										
1,2-Dimethylbenzene	4	71-96	32-160	4	0	2	5-23	20	1	1
1,2-Dichlorobenzene	4	72-84	37-154	4	0	2	8-15	20	2	0
1,3-Dichlorobenzene	4	77-84	42-143	4	0	2	1-9	20	2	0
1,4-Dichlorobenzene	4	86-135	42-143	4	0	2	9-15	20	2	0

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**TABLE H-3 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD VOLATILE ORGANIC COMPOUNDS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

1 of 4

	Accuracy				Precision					
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
8010										
Bromodichloromethane	8	73-107	42-172	8	0	4		30	4	0
Bromobenzene	8		8-184	8	0	4	0-29	30	4	0
Bromoform	8	87-146	13-159	8	0	4	0-24	30	4	0
Bromomethane	8	61-112	1-144	8	0	4	4-29	30	4	0
Bromochloromethane	8	79-114	49-133	8	0	4	0-27	30	4	0
Carbon tetrachloride	8	80-104	43-143	8	0	4	0-26	30	4	0
2-Chloroethylvinyl eter	8	99-146	14-186	8	0	4	0-21	30	4	0
Chloroethane	8	80-106	46-137	8	0	4	0-26	30	4	0
Chloroform	8	80-99	49-133	8	0	4	0-18	30	4	0
Cholorbenzene	8	75-114	38-150	8	0	4	0-25	30	4	0
Chloromethane	8	57-121	1-193	8	0	4	12-72	30	3	1
2-Chlorotoluene	8	64-107	8-184	8	0	4	0-29	30	4	0
4-Chlorotoluene	8	60-115	8-184	8	0	4	7-22	30	4	0
1,2-Dibromoethane	8	88-146	24-191	8	0	4	0-24	30	4	0
Dibromochloromethane	8	79-123	24-191	8	0	4	0-27	30	4	0

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**TABLE H-3 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD VOLATILE ORGANIC COMPOUNDS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
8010										
Dibromomethane	8	88-138	42-172	8	0	4	0-31	30	3	0
1,2-Dichlorobenzene	8	64-100	1-208	8	0	4	0-18	30	4	1
1,3-Dichlorobenzene	8	63-100	7-187	8	0	4	0-18	30	4	0
1,4-Dichlorobenzene	8	61-107	42-143	8	0	4	0-26	30	4	0
1,1-Dichloroethane	8	79-106	47-132	8	0	4	9-19	30	4	0
1,2-Dichloroethane	8	80-115	51-147	8	0	4	0-26	30	4	0
1,1-Dichloroethene	8	76-104	28-167	8	0	4	0-26	30	4	0
trans-1,2-Dichloroethene	8	76-96	38-155	8	0	4	0-18	30	4	0
1,2-Dichloropropane	8	79-107	44-156	8	0	4	0-19	30	4	0
cis-1,3,Dichloropropene	8	72-107	22-178	8	0	4	7-27	30	4	0
trans1,3, Dichloropropene	8	81-113	22-178	8	0	4	7-29	30	4	0
Methylene Chloride	8	51-148	25-162	8	0	4	0-41	30	3	1
1,1,2,2-Trichloroethane	8	104-159	8-184	8	0	4	0-21	30	4	0

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**TABLE H-3 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD VOLATILE ORGANIC COMPOUNDS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
1,1,1,2-Tetrachloroethane	8	75-106	38-150	8	0	4	0-25	30	4	0
8010										
Tetrachloroethene	8	74-104	26-162	8	0	4	3-29	30	4	0
1,1,1-Trichloroethane	8	71-106	41-138	8	0	4	0-21	30	4	0
1,1,2-Trichloroethane	8	88-123	39-136	8	0	4	0-24	30	4	0
Trichloroethene	8	80-104	35-146	8	0	4	0-26	30	4	0
1,2,3-Trichloropropane	8	72-169	8-184	8	0	4	0-19	30	4	0
Vinyl Chloride	8	83-112	26-163	8	0	4	0-15	30	4	0
8020										
Benzene	8	76-100	39-150	8	0	4	0-18	30	4	0
Ethyl benzene	8	73-100	32-160	8	0	4	0-19	30	4	0
Chlorobenzene	8	71-100	55-135	8	0	4	7-18	30	4	0
Methyl-tert-butyl-ether	8	79-112	39-150	8	0	4	4-14	30	4	0
Styrene	8	72-100	32-160	8	0	4	4-9	30	4	0
Toluene	8	81-97	46-148	8	0	4	0-9	30	4	0

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**TABLE H-3 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD VOLATILE ORGANIC COMPOUNDS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
1,4-Dimethylbenzene	8	78-100	32-160	8	0	4	8-9	30	4	0
1,3-Dimethylbenzene	8	78-100	32-160	8	0	4	8-9	30	4	0
8020										
1,2-Dimethylbenzene	8	87-100	32-160	8	0	4	0-9	30	4	0
1,2-Dichlorobenzene	8	61-100	37-154	8	0	4	0-9	30	4	0
1,3-Dichlorobenzene	8	63-100	42-143	8	0	4	0-9	30	4	0
1,4-Dichlorobenzene	8	63-100	42-143	8	0	4	0-17	30	4	0

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**TABLE H-4 LABORATORY QUALITY CONTROL SUMMARY:**  
**WATER MS/MSD SEMIVOLATILE ORGANIC COMPOUNDS**  
 158th Fighter Wing, Vermont ANG, Burlington Vermont

1 of 1

	Accuracy				Precision					
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Phenol	4	64-84	40-120	4	0	2	2-24	40	2	0
bis(2-Chloroethyl)ether	4	81-98	50-110	4	0	2	8-18	40	2	0
2-Chlorophenol	4	72-89	50-110	4	0	2	1-19	40	2	0
n-Nitroso-di-n-propylamine	4	94-113	30-110	3	1	2	0-18	40	2	0
Hexachloroethane	4	88-208	20-110	2	2	2	11-14	40	2	0
Isophorone	4	91-300	50-110	2	2	2	0-15	40	2	0
1,2,4-Trichlorobenzene	4	70-127	40-100	2	2	2	1-13	40	2	0
Naphthalene	4	23-143	30-110	1	3	2	1-68	40	1	1
4-Chloroaniline	4	11-26	10-120	4	0	2	4-48	40	1	1
2,4,6-Trichlorophenol	4	81-93	40-120	4	0	2	3-7	40	2	0
2,4-Dinitrotoluene	4	66-78	30-120	4	0	2	9-7	40	2	0
Diethylphthalate	4	82-97	50-120	4	0	2	0-6	40	2	0
N-Nitrosodiphenylamine	4	86-101	30-110	4	0	2	3-6	40	2	0
Hexachlorobenzene	4	70-76	40-120	4	0	2	5-6	40	2	0
Benzo(a)pyrene	4	60-87	50-120	4	0	2	2-12	40	2	0

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**TABLE H-5 LABORATORY QUALITY CONTROL SUMMARY:  
SOIL MS/MSD SEMIVOLATILE ORGANIC COMPOUNDS  
158th Fighter Wing, Vermont ANG, Burlington Vermont**

1 of 1

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Phenol	8	0-93	26-90	5	3	4	6-200	35	3	1
2-Chlorophenol	8	0-92	25-102	7	1	4	7-200	50	3	1
1,4-Dichlorobenzene	8	45-89	28-104	8	0	4	4-33	27	3	1
n-Nitroso-di-n-propylamine	8	0-105	41-126	6	2	4	0-22	38	4	0
1,2,4-Trichlorobenzene	8	0-99	38-107	6	2	4	0-28	23	3	1
4-Chloro-3-methylphenol	8	0-102	26-103	6	2	4	0-22	33	4	0
Ancenapthene	8	-52-106	31-137	6	2	4	0-542	19	2	2
4-Nitrophenol	8	0-110	11-114	6	2	4	0-62	50	3	1
2,4-Dinitrotoluene	8	0-97	28-89	6	2	4	0-200	47	4	0
Pentachlorophenol	8	0-108	17-109	6	2	4	0-35	47	4	0
Pyrene	8	-99-114	35-142	7	1	4	3-669	36	3	1



**TABLE H-6 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD METALS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

1 of 1

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Aluminum	4	47.9-113.4	75-125	3	1	4	2.1-25.2	20	4	0
Antimony	4	93.5-121.2	75-125	4	0	4	0	20	4	0
Arsenic	4	131.8-169.3	75-125	0	4	4	0-32.3	20	2	2
Barium	4	86.1-114.1	75-125	4	0	4	5.5-14.1	20	4	0
Beryllium	4	100-130.7	75-125	3	1	4	0	20	4	0
Cadmium	4	64.0-77.1	75-125	1	3	4	0	20	4	0
Chromium	4	81.7-112	75-125	4	0	4	0-27.4	20	3	1
Cobalt	4	84.5-111.1	75-125	4	0	4	0-200	20	2	2
Copper	4	85.8-114.4	75-125	4	0	4	0-18.2	20	4	0
Iron	4	-631.3-151.3	75-125	2	2	4	5.9-22.2	20	3	1
Lead	4	57.1-101.4	75-125	3	1	4	0-10.8	20	4	0
Manganese	4	77.4-113.6	75-125	4	0	4	0.3-16.9	20	4	0
Mercury	4	96.8-115	75-125	4	0	4	0	20	4	0
Nickel	4	87.7-112.1	75-125	4	0	4	0-21.4	20	3	1
Selenium	4	38.1-119.8	75-125	1	3	4	0	20	4	0
Silver	4	79.5-87.2	75-125	4	0	4	0	20	4	0
Thallium	4	0-31.8	75-125	0	4	4	0	20	4	0
Vanadium	4	85.6-112.1	75-125	4	0	4	0-20.2	20	4	0
Zinc	4	40.4-95.4	75-125	3	1	4	15.4-200	20	2	2

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**TABLE H-7 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD METALS**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

1 of 2

	Accuracy				Precision					
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Aluminum						4	1.8-10.7	35	4	0
Antimony	4	49.8-66.3	75-125	0	4	4	0	35	4	0
Arsenic	4	81.7-125.1	75-125	4	0	4	1.9-22.3	35	4	0
Barium	4	87-96.3	75-125	4	0	4	0.1-6.1	35	4	0
Beryllium	4	86.3-99.9	75-125	4	0	4	0-200	35	2	2
Cadmium	4	53.3-91.5	75-125	3	1	4	0-11.4	35	4	0
Calcium						4	0-93.1	35	3	1
Chromium	4	82.3-95.5	75-125	4	0	4	0-59.6	35	3	1
Cobalt	4	84.2-94.7	75-125	4	0	4	0-24	35	4	0
Copper	4	84.6-97	75-125	4	0	4	0-5.1	35	4	0
Iron						4	0.9-15.1	35	4	0
Lead	4	90-9999.9	75-125	3	1	4	2.4-98	35	3	1
Magnesium						4	0.5-14.1	35	4	0
Manganese	4	-123.5-103.1	75-125	3	1	4	2.3-63.2	35	3	1
Mercury	4	84.6-102.6	75-125	4	0	4	0-200	35	3	1
Nickel	4	84.8-94.2	75-125	4	0	4	1.8-16.2	35	4	0
Potassium						4	0.6-200	35	1	3
Selenium	4	59.9-80.9	75-125	3	1	4	0	35	4	1
Silver	4	81.7-122	75-125	4	0	4	0-91.4	35	3	1
Sodium						4	1.1-32.6	35	4	0
Thallium	4	86.9-94.2	75-125	4	0	4	0	35	4	0
Vanadium	4	84-95.4	75-125	4	0	4	3.7-15.5	35	4	0

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TABLE H-7 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD METALS  
158th Fighter Wing, Vermont ANG, Burlington Vermont

2 of 2

	Accuracy				Precision					
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Aluminum	4	49.8-66.3	75-125	0	4	4	1.8-10.7	35	4	0
Antimony	4	81.8-111.4	75-125	4	0	4	0	35	4	0
Zinc	4					4	0.6-29.1	35	4	0

control limits of  $\pm 20\%$  for analytical precision. Control limits for TPH MS/MSD are detailed in Tables H-8 and H-9.

The results for soil are considered to have little impact on the environmental data quality and considered more likely to be the result of the regional matrix variability that could not be overcome by the sample mixing prior to the analyses of the samples. Water RPD values which exceeded control limits are most likely due to the unequal distribution of suspended minute particulates that could not be evenly distributed by well development procedures and mixing procedures since the analytical QC results do not indicate a systemic laboratory problem. Based on 489 of the 539 RPD values calculated, 90.7% of the data met control limits and the acceptable laboratory QC, therefore, the DQO for analytical precision has been met.

Sampling precision refers to the ability of the sampling procedure to reproduce the conditions at the site. Sampling precision was assessed through the collection of field replicates. Duplicate samples were collected at a rate of one in 20 and submitted with the environmental samples for VOC, SVOC, TAL metals, and TPH analyses. RPD values were calculated for all sample/duplicate pairs. The RPDs were then used to measure the sampling precision. Four soil, one sediment, one surface water, and one groundwater duplicates were collected during the ASI field effort. The duplicate samples were collected using the same procedures used to collect the environmental samples. The overall project objective for sampling precision outlined in the Sampling and Analysis Plan is to have 90% of the values calculated for the sampling program within the specified RPD range of  $\pm 20\%$ , for water samples, and  $\pm 35\%$  for soil samples. Based on the RPD values calculated, 873 of the 965 RPD values calculated met the associated RPD criteria. This represents a sampling precision of 91%. As a result, the DQO for analytical precision has been met. A complete discussion of all replicate samples is presented in Section H.3.

Based on the results of the laboratory and sampling precision, 1362 of 1504 RPD values met the associated RPD criteria. These results represent an overall precision of 91%. As a result, the DQO for overall precision has been met.

**TABLE H-8 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD TPH**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

1 of 1

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
TPH As Gasoline	4	104-111	75-125	4	0	2	2-4	20	2	0
TPH As Diesel	4	100-304	50-150	2	2	2	18-22	25	2	0

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**TABLE H-9 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD TPH**  
158th Fighter Wing, Vermont ANG, Burlington Vermont

1 of 1

Precision										
Accuracy										
	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
TPH As Gasoline	12	40-102	75-125	10	2	6	0-15	20	6	0
TPH As Diesel	8	28-541	50-150	5	3	4	5-104	25	2	2

## H.2.2 ACCURACY

Accuracy measures the bias in a measurement system. Accuracy was defined as the degree of difference between measured or calculated values and the true value. The closer the numerical value of the measurement is to the true value, or actual concentration, the more accurate the measurement. Overall project accuracy consists of both analytical and sampling accuracy.

Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at a known concentration before analysis. Analytical accuracy was determined using MS/MSD and surrogate recovery data. The following equation was used to calculate percent recovery:

$$\%R = \frac{A_r - A_o}{A_f} \times 100$$

Where:  $A_r$  = Total analyte concentration detected in the spiked sample  
 $A_o$  = Analyte concentration detected in the unspiked sample  
 $A_f$  = Analyte concentration added to the sample

Objectives for accuracy were to have 90% of the data within the specified percent recovery levels for that compound or element. Analytical accuracy was qualitatively assessed by evaluating the following laboratory QC information: sample holding times, method blanks, tuning and mass calibrations, gas chromatography/mass spectroscopy (GC/MS only), internal standards (GC/MS only), laboratory control samples and method blank spike recoveries, and initial and continuing calibration results calculated from all analyses conducted on environmental samples. Analytical accuracy was quantitatively assessed by evaluating the percent recoveries of spikes and surrogates.

### Percent Recoveries

Four of the 188 water, and none of the 376 soil percent recoveries were outside the control limits for MS/MSD analyses conducted on the samples collected and analyzed for VOCs. Established control limits for VOC percent recovery values are presented in Table H-2 and H-3. Four of the 125 water and 29 of the 44 soil surrogate percent recoveries were outside the control limits for surrogate analysis. All supporting VOC QC information cited above was also qualitatively evaluated with respect to the analytical accuracy DQOs.

Ten of the 60 water, and 19 of the 88 soil percent recovery values calculated were outside the control limits for the MS/MSD analyses conducted on the samples collected and analyzed for SVOCs. Established control limits for SVOC percent recovery values are presented in Tables H-4 and H-5. One of the 84 water, and 2 of the 320 soil percent recovery values calculated were outside the control limits for the surrogate analysis conducted on the samples collected and analyzed for SVOCs. All supporting SVOC QC information cited above were also qualitatively evaluated with respect to the analytical accuracy DQOs.

Twenty of the 76 water, and 8 of the 68 soil TAL metals percent recovery values from the matrix spike analysis conducted on the samples exceeded recovery limits of 75- to 125%. Established control limits for metals percent recovery values are presented in Tables H-6 and H-7. All supporting TAL QC information cited above were also qualitatively evaluated with respect to the analytical accuracy DQO. These results are not considered to have any adverse impact on the environmental data quality.

Two of the 8 water, and 5 of the 20 soil percent recovery values for MS/MSD values obtained for TPH analysis were outside control limits listed in Table H-8 and H-9. One of the 26 water, and 15 of the 78 soil percent recovery values calculated were outside the control limits for the surrogate analysis conducted on the samples collected and analyzed for TPH. All supporting TPH QA information cited above also were qualitatively evaluated with respect to the analytical accuracy DQO. All other QC criteria for TPH analysis were met.



A total of 120 of all 1561 calculated percent recovery values exceeded control limits indicating that 92.3% accuracy was achieved. As a result of 92.3% of all percent recoveries meeting control limits, the DQO for analytical accuracy has been met.

Sampling accuracy was maximized by adherence to the strict QA program presented in the ASI Quality Assurance Project Plan (QAPP). All procedures (i.e., soil boring installation, soil samples collection procedures, and health monitoring equipment calibration and operation) used during the ASI were documented as Standard Operating Procedures (SOPs). Field QA samples (i.e., trip blanks, field blanks, and equipment rinseates) were prepared such that all samples represented the particular site from which they were collected, and assessed any cross-contamination that may have occurred. The environmental samples associated with the appropriate field QA samples were qualified based on the contaminants detected in the field QA samples. Compounds and elements detected in associated environmental samples with concentrations less than five times (ten times for common laboratory contaminants) that detected in the blank were considered as estimates and were qualified "B" accordingly.

#### Trip blanks

Twelve trip blanks were shipped and analyzed with the environmental samples analyzed for VOCs. Chloroform, chloromethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, methyl-tert-butyl ether, 1,1,1-trichloroethane, tetrachloroethane, toluene, and xylenes were detected in the trip blanks. These concentrations could not be attributed to the laboratory environment, and as a result, samples were qualified for cross-contamination. Trip blanks with detectable concentrations of contaminants are detailed in Section H.3.

#### Field Blanks

Four field blanks were collected and analyzed with the environmental samples. The field blanks consisted of potable water sources used in the steam cleaner for decontamination of equipment, and the American Society for Testing and Materials (ASTM) Type I water. Aluminum, barium, benzene, bis(2-ethylhexyl)phthalate, bromodichloromethane, calcium, chloroform, chloromethane, copper, diethyl phthalate, di-n-butyl phthalate, ethylbenzene, iron,

lead, magnesium, manganese, methylene chloride, phenol, potassium, sodium, styrene, toluene, 1,1,1-trichloroethane, TPH-gasoline, xylenes, and zinc were detected in the selected field blanks collected during the ASI. The low levels detected in the field blanks are not considered to have contributed to any levels in the associated environmental samples. Detected compounds for the field blanks are detailed in Section H.3.

#### Equipment Rinseates

Seven equipment rinseates were collected by pouring ASTM Type I water through decontaminated sampling equipment and were analyzed with the environmental sample to document the effectiveness of the decontamination efforts. VOCs including benzene, chloroform, chloromethane, ethylbenzene, methylene chloride, styrene, and 1,1,1-trichloroethane were detected in the equipment rinseates. SVOCs including bis(2-ethylhexyl)phthalate and diethylphthalate were detected in equipment rinseates. Metals such as aluminum, barium, calcium, iron, lead, manganese, sodium, and zinc were detected in the equipment rinseates. TPH-gasoline was detected in several of the equipment rinseates. The majority of the compounds and elements detected in the equipment rinseates were below the CRQL. All compounds and elements detected in the equipment rinseates are detailed in Section H.3.

Based on an evaluation of the compounds detected in the field QC blanks, overall field accuracy is deemed acceptable, except where noted. A complete discussion of field QC results is presented in Section H.3.

#### **H.2.3 Representativeness**

Representativeness expresses the degree to which the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Sample representativeness was ensured, during the ASI, by collecting sufficient samples of a population medium, properly distributed with respect to location and time. Representativeness was assessed by reviewing the drilling and sample collection methods used during the ASI at the base. The reproducibility of a representative

set of samples reflects the degree of heterogeneity of the sampled medium, as well as the effectiveness of the sampling techniques.

Soil samples were collected from Sites 3 and 4. Soil samples were submitted for laboratory analyses from all sites sampled. Surface soil samples collected between 0 to 1 ft and 1 to 2 ft were collected using a stainless steel hand auger equipped with a 1 ft removable stainless steel liner. All other soil samples were collected from borings. All borings were advanced with a truck-mounted drilling rig using continuous-flight hollow stem augers. Soil samples were collected, from each boring, using a 2 ft split-spoon sampler equipped with four 6 in. removable stainless steel liners. Samples were collected continuously from the surface to 10 ft and at 5 ft centers to the water table for all borings not converted to monitoring wells. Samples were collected continuously from the surface to the water table and at 5 ft centers to final depth for all borings used as monitoring wells. Split-spoon samples were logged according to the Unified Soils Classification System and field-screened with a photo ionization detector (PID) meter and field GC for VOC concentrations. Blow counts were recorded as a measure of the relative soil density. All borings, not used as monitoring wells, were backfilled with a cement/bentonite slurry to the surface. All borings were marked at the surface and surveyed. A minimum of two soil samples, from each boring, were submitted for laboratory analyses. The sample collected from just below the ground surface and the sample collected from unsaturated soils just above the water table were submitted for laboratory analyses. A third and fourth sample were sometimes collected based on PID results and/or lithology. No samples collected from monitoring well borings were submitted for laboratory analyses. Filtered groundwater samples, for metals analyses, were collected using a decontaminated Teflon® bailer and a disposable, 0.45  $\mu\text{m}$  filter. Groundwater samples were obtained after development of each well. After well installation, all wells were allowed to recharge, were then purged, and sampled. The volume of water in each well casing was calculated prior to purging and 4 to 5 casing volumes were removed. A decontaminated Teflon® bailer was used to remove the stagnant groundwater from each well. Color, degree of turbidity, odor and other physical properties of the water were recorded during development. In addition, pH, temperature, and conductivity of the groundwater were obtained before and after purging, and prior to sampling. These data were collected to ensure a representative groundwater sample was collected.

Based on the evaluation of the factors described above and summarized in Section H.3 the samples collected during the ASI are considered to be representative of the environmental conditions at the base.

#### **H.2.4 Comparability**

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another and is limited to the other PARCC parameters, because only when precision and accuracy are known can one data set be compared to another. To optimize comparability, only the specific methods and protocols that were specified in the ASI QAPP were used to collect and analyze samples during the ASI. By using consistent sampling and analysis procedures, all data sets are comparable within the two sites at the base, between the two sites, or among ANG facilities nationwide. This consistency ensures that remedial action decision and priorities are based on a consistent database.

All samples collected for VOC and SVOC analyses were analyzed using SW-846 Method 8010/8020 and 3/90 CLP, respectively. All samples collected for TPH and TAL metals were analyzed using SW-846 Method 8015 and EPA Methods 6010/7000, respectively.

Based on the precision and accuracy assessment presented above, the data collected during the ASI are considered to be comparable with the data collected during previous investigations.

#### **H.2.5 Completeness**

Completeness was defined as the percentage of usable data obtained from a measurement system. Usable data are those data not rejected during the data validation process. Values and concentrations qualified "R" or "B" are excluded from use in the ASI report due to increased risk of indicating false positives or omitting compounds or elements that are present. Project completeness was defined as the percentage of data points used to prepare the risk characterization and recommendations for site remediation. The objective for project completeness was set at 90%.

Based on the evaluation of the laboratory QC results for the 6507 data points presented in Appendix I, these data were considered equal to 96 % complete, and as such, were used as the basis of all recommendations presented in this report. A total of 259 data points were rejected for use because the data were qualified "R" indicating unreliable results or "B" indicating possible contamination from an outside source.

### H.3 FIELD QUALITY CONTROL ASSESSMENT

In an effort to assess field QC, field QC samples were collected. These samples include trip blanks, field blanks, equipment rinseates, and field duplicate samples. The number of field QC samples collected was in accordance with HAZWRAP guidance as presented in DOE/HWP-69/R2. All field QC samples were collected and analyzed by the same SOPs and methods used for the 40 environmental samples. Table H-10 contains a cross-reference of the associated field QC blanks.

#### Trip Blanks

Trip blanks were used to check for cross-contamination during sample handling and shipping of samples to be analyzed for VOCs. A trip blank was shipped with each cooler containing samples to be analyzed for VOCs. Trip blanks, for the two rounds of sampling, were supplied by CompuChem Environmental Corporation in North Carolina. Trip blanks were prepared using ASTM Type I water. The trip blanks were stored with unused sample bottles prior to being packed and shipped with the samples.

A total of 12 trip blanks were shipped with samples and analyzed for VOCs. Table H-11 summarizes the concentrations of the VOCs detected in the trip blanks used during the ASI field effort. Chloroform, chloromethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, methyl-tert-butyl ether, 1,1,1-trichloroethane, tetrachloroethane, toluene, and xylenes were detected in the trip blanks collected during the Vermont ANG ASI. The contamination detected in the trip blanks can be attributed to several possible causes.

# H-10 Quality Control Cross-reference

Sample ID	Sample Date	Trip Blank	Field Blank	Equipment Rinseate
V3-B1-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B1-1113	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B1-1113D	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B2-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B2-1113	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B3-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B3-1315	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B4-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B4-0810	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B4-1315	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B4-1315D	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B5-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B5-1315	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-BG1-0305	09/20/94	TB-092094-1	FB-092194-1, FB-090894-D	ER-092094-1
V3-BG1-1094	10/24/94	TB-102494-2	FB-092494-P	ER-102494-1
V3-BG1-1094D	10/24/94	TB-102494-2	FB-092494-P	ER-102494-1
V3-BG1-1820	09/20/94	TB-092094-1	FB-092194-1, FB-090894-D	ER-092094-1
V3-BG1-3840	09/20/94	TB-092094-1	FB-092194-1, FB-090894-D	ER-092094-1
V3-BG1-3840D	09/20/94	TB-092094-1	FB-092194-1, FB-090894-D	ER-092094-1
V3-MW1-1094	10/31/94	TB-103194-1	FB-092494-P	ER-102494-1
V3-MW3-1094	10/31/94	TB-103194-1	FB-092494-P	ER-102494-1
V4-B1-0911	09/08/94	TB-090894-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B1-1719	09/08/94	TB-090894-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B2-1416	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B2-1921	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B3-1416	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B3-1921	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B4-0911	09/08/94	TB-090894-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B4-1719	09/08/94	TB-090894-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B5-0406	09/14/94	TB-091494-1	FB-090894-P, FB-090894-D	ER-091394-1
V4-B5-0911	09/14/94	TB-091494-1	FB-090894-P, FB-090894-D	ER-091394-1
V4-B5-1719	09/14/94	TB-091494-1	FB-090894-P, FB-090894-D	ER-091394-1
V4-B6-1921	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B6-2426	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-BG-0911	09/10/94	TB-091094-1	FB-090894-P, FB-090894-D	
V4-BG-1416	09/10/94	TB-091094-1	FB-090894-P, FB-090894-D	
V4-BG-1416D	09/10/94	TB-091094-1	FB-090894-P, FB-090894-D	
V4-BG-1921	09/10/94	TB-091094-1	FB-090894-P, FB-090894-D	
V4-BG1-1094	10/25/94	TB-102594-1	FB-092494-P	ER-102494-1
V4-D1-0050	10/28/94	TB-102894-2	FB-092494-P	ER-102894-2
V4-D1-0050D	10/28/94	TB-102894-2	FB-092494-P	ER-102894-2
V4-D2-0050	10/28/94	TB-102894-2	FB-092494-P	ER-102894-2
V4-D3-0050	10/28/94	TB-102894-2	FB-092494-P	ER-102894-2
V4-MW2-1094	10/27/94	TB-102794-1	FB-092494-P	ER-102494-1
V4-MW3-1094	10/26/94	TB-102694-1	FB-092494-P	ER-102494-1
V4-SW3-1094	10/28/94	TB-102894-2	FB-092494-P	ER-102894-1
V4-SW3-1094D	10/28/94	TB-102894-2	FB-092494-P	ER-102894-1

# H-11 Analytes Detected in Trip Blanks

Sample ID	Analyte	Result	Qualifier	Units
TB090794-1	1,2-Dichlorobenzene	0.19	()	µg/l
TB090794-1	1,3-Dichlorobenzene	0.12	()	µg/l
TB090794-1	1,4-Dichlorobenzene	0.12	()	µg/l
TB090794-1	Toluene	0.10	()	µg/l
TB090894-1	1,1,1-Trichloroethane	0.47	()	µg/l
TB090894-1	1,2-Dichlorobenzene	0.19	()	µg/l
TB090894-1	1,3-Dichlorobenzene	0.12	()	µg/l
TB090894-1	1,4-Dichlorobenzene	0.12	()	µg/l
TB090894-1	Chloroform	0.02	()	µg/l
TB090894-1	Chloromethane	0.03	()J	µg/l
TB090894-1	1,3-Dichlorobenzene	0.05	()	µg/l
TB090894-1	1,4-Dichlorobenzene	0.07	()	µg/l
TB090894-1	Toluene	0.19	()	µg/l
TB090894-1	m-Xylene	0.06	()	µg/l
TB090894-1	o-Xylene	0.14	()	µg/l
TB090894-1	p-Xylene	0.04	()	µg/l
TB091094-1	Methyl-tert-butyl ether	1.40	()	µg/l
TB091394-1	m-Xylene	0.43	()	µg/l
TB091394-1	p-Xylene	0.43	()	µg/l
TB092094-1	1,1,1-Trichloroethane	0.05	()J	µg/l
TB092094-1	Chloroform	0.11	()	µg/l
TB092094-1	Chloromethane	0.27	()	µg/l
TB102594-1	m-Xylene	0.15	()J	µg/l
TB102594-1	p-Xylene	0.15	()J	µg/l
TB102894-2	1,1,1-Trichloroethane	0.02	()	µg/l
TB102894-2	Chloromethane	0.14	()	µg/l
TB102894-2	Tetrachloroethene	0.03	()	µg/l
TB103194-1	Toluene	0.12	()	µg/l

Chloroform is a common laboratory contaminant and is frequently detected. The other contamination could be attributed to contamination from samples stored with the trip blanks at the laboratory.

#### Field Blanks

Field blanks were collected to provide baseline analytical data for the water used for equipment decontamination. A total of four field blanks were collected, including blanks for the ASTM Type I water and the potable water used in the steam cleaner and as decontamination water. Field blanks were collected by randomly selecting sample containers, filling them with water from the sample source, and then preserving, as appropriate, for the required analysis. The blanks were analyzed in the same manner as the associated environmental samples. Aluminum, barium, benzene, bis(2-ethylhexyl)phthalate, bromodichloromethane, calcium, chloroform, chloromethane, copper, diethyl phthalate, di-n-butyl phthalate, ethylbenzene, iron, lead, magnesium, manganese, methylene chloride, phenol, potassium, sodium, styrene, toluene, 1,1,1-trichloroethane, TPH-gasoline, xylenes, and zinc were detected in selected field blanks prepared during the ASI. Table H-12 summarizes the concentrations of elements detected in the field blanks collected at the base. The Vermont ANG ASI was conducted in two sampling events, separate field blanks were obtained for each sampling event. The low levels of compounds and elements detected in the field blanks are not considered to have contributed to any levels seen in the associated environmental samples.

#### Equipment Rinseates

Equipment rinseates were collected to check for cross-contamination introduced from sample to sample through the sampling equipment. All equipment rinseates were prepared by pouring ASTM Type I water through or over sampling equipment which had been decontaminated. The equipment rinseates were preserved, as appropriate, for the required analysis and analyzed using the same methods as the associated environmental samples. Seventeen equipment rinseates were prepared from the equipment used to obtain environmental samples. Table H-13 summarizes the concentrations of elements detected in the equipment blanks



# H-12 Analytes Detected in Field Blanks

Sample ID	Analyte	Result	Qualifier	Units
FB090894-D	1,1,1-Trichloroethane	0.58		µg/l
FB090894-D	Chloroform	0.22	()	µg/l
FB090894-D	Methylene chloride	8.70		µg/l
FB090894-D	Benzene	0.14	()	µg/l
FB090894-D	Ethylbenzene	0.11	()	µg/l
FB090894-D	Styrene	0.13	()	µg/l
FB090894-D	Di-n-butyl phthalate	1.00	()	µg/l
FB090894-D	bis(2-Ethylhexyl)phthalate	2.00	()	µg/l
FB090894-P	Bromodichloromethane	4.00		µg/l
FB090894-P	Chloroform	46.00		µg/l
FB090894-P	Benzene	0.09	()	µg/l
FB090894-P	Toluene	0.20	()	µg/l
FB090894-P	m-Xylene	0.07	()	µg/l
FB090894-P	o-Xylene	0.18	()	µg/l
FB090894-P	Di-n-butyl phthalate	0.90	()	µg/l
FB090894-P	Diethyl phthalate	0.60	()	µg/l
FB090894-P	Phenol	1.00	()	µg/l
FB090894-P	Aluminum	1500.00		µg/l
FB090894-P	Barium	30.20	()	µg/l
FB090894-P	Calcium	30800.00		µg/l
FB090894-P	Copper	33.70		µg/l
FB090894-P	Iron	1740.00		µg/l
FB090894-P	Lead	3.20		µg/l
FB090894-P	Magnesium	3940.00	()	µg/l
FB090894-P	Manganese	69.20		µg/l
FB090894-P	Potassium	1740.00	()	µg/l
FB090894-P	Sodium	9220.00		µg/l
FB090894-P	Zinc	125.00		µg/l
FB092194-1	4,4'-DDE	0.00	()	µg/l
FB092194-1	Endosulfan sulfate	0.00	()	µg/l
FB092194-1	Endrin	0.00	()	µg/l
FB092194-1	1,1,1-Trichloroethane	0.32	()	µg/l
FB092194-1	Benzene	0.23	()J	µg/l
FB092194-1	Toluene	0.87		µg/l
FB092194-1	Aluminum	784.00		µg/l
FB092194-1	Barium	14.50	()	µg/l
FB092194-1	Calcium	26000.00		µg/l
FB092194-1	Copper	9.30	()	µg/l
FB092194-1	Iron	1000.00		µg/l
FB092194-1	Lead	2.60	()	µg/l
FB092194-1	Magnesium	3780.00	()	µg/l
FB092194-1	Manganese	15.90		µg/l
FB092194-1	Potassium	1160.00	()	µg/l
FB092194-1	Sodium	8430.00		µg/l
FB092194-1	Zinc	90.50		µg/l
FB092194-1	TPH-Purgeable as Gasoline	0.03		mg/kg
FB092194-1	1,1,1-Trichloroethane	0.09	()	µg/l
FB102494-P	Chloroform	45.00		µg/l
FB102494-P	Chloromethane	0.03	()	µg/l
FB102494-P	Dibromomethane	0.38	()J	µg/l
FB102494-P	Ethylbenzene	0.28		µg/l
FB102494-P	Barium	6.90	()	µg/l
FB102494-P	Calcium	20000.00	()	µg/l
FB102494-P	Copper	597.00	J	µg/l
FB102494-P	Iron	399.00		µg/l
FB102494-P	Lead	2.80		µg/l
FB102494-P	Magnesium	3520.00		µg/l
FB102494-P	Manganese	4.80	()	µg/l
FB102494-P	Potassium	1470.00	()	µg/l

### H-12 Analytes Detected in Field Blanks

FB102494-P	Sodium	7860.00	µg/l
FB102494-P	Zinc	140.00	µg/l
FB102494-P	TPH-Purgeable as Gasoline	0.06	

### H-13 Analyte Detected in Equipment Rinseates

Sample ID	Analyte	Result	Qualifier	Units
ER090894-1	1,1,1-Trichloroethane	0.39		µg/l
ER090894-1	Chloroform	0.18	()	µg/l
ER090894-1	Chloromethane	0.04	()	µg/l
ER090894-1	Methylene chloride	9.00		µg/l
ER090894-1	Benzene	0.11	()	µg/l
ER090894-1	Ethylbenzene	0.13	()	µg/l
ER090894-1	Styrene	0.13	()	µg/l
ER090894-1	Di-n-butyl phthalate	0.60	()	µg/l
ER091294-1	1,1,1-Trichloroethane	0.20	()	µg/l
ER091294-1	Chloroform	0.23	()	µg/l
ER091294-1	bis(2-Ethylhexyl)phthalate	0.60	()	µg/l
ER091294-1	Barium	1.00	()	µg/l
ER091294-1	Lead	2.50	()	µg/l
ER091294-1	Zinc	10.40	()	µg/l
ER091394-1	1,1,1-Trichloroethane	0.16	()	µg/l
ER091394-1	Chloroform	0.20		µg/l
ER091394-1	Methylene chloride	9.10	J	µg/l
ER091394-1	Calcium	56.10	()	µg/l
ER091394-1	Zinc	13.30	()	µg/l
ER102494-1	Methylene chloride	3.30		µg/l
ER102494-1	Barium	0.76	()	µg/l
ER102494-1	Calcium	89.20	()	µg/l
ER102494-1	Iron	63.00	()	µg/l
ER102494-1	Manganese	2.70	()	µg/l
ER102494-1	TPH-Purgeable as Gasoline	0.08		
ER102894-1	Aluminum	61.30	()	µg/l
ER102894-1	Barium	0.72	()	µg/l
ER102894-1	TPH-Purgeable as Gasoline	0.11		MG/L
ER102894-2	bis(2-Ethylhexyl)phthalate	4.00	()	µg/l
ER102894-2	Aluminum	65.50	()	µg/l
ER102894-2	Sodium	422.00	()	µg/l
ER102894-2	Zinc	5.70	()J	µg/l
ER102894-2	TPH-Purgeable as Gasoline	0.05		mg/l

collected at the base. VOCs including benzene, chloroform, chloromethane, ethylbenzene, methylene chloride, styrene, and 1,1,1-trichloroethane were detected in the equipment rinseates. SVOCs including bis(2-ethylhexyl)phthalate and diethylphthalate were detected in equipment rinseates. Metals such as aluminum, barium, calcium, iron, lead, manganese, sodium, and zinc were detected in the equipment rinseates. TPH-gasoline was detected in several of the equipment rinseates.

#### Field Replicates

Field replicates were used as a measure of sampling precision, samples collection reproducibility, and media variability during the ASI at the base. Field RPD values were calculated sample/duplicate pairs. The RPD value of the detected compound or parameter was reviewed to assess the sample collection reproducibility and matrix variability. A total of 30 soil samples, 3 sediment samples, 1 surface water sample, 6 groundwater samples, 4 soil replicate samples, 1 sediment replicate sample, 1 surface water replicate sample, and 1 groundwater replicate sample were collected. Increased percent differences were expected for all analytes detected in soil samples, since all samples remained in stainless steel sleeves (i.e., not mixed) after the sampling equipment was retrieved from the borehole. The field replicate for each soil analyses were obtained from the adjacent sleeve, water samples were split into different sample containers on sampling. Nine hundred sixty five RPDs were calculated for the sample/duplicate pairs. Of these 873 met the associated QC requirements,

Average values for field replicates were obtained using the following guidelines;

- (1) If the analyte was detected in both samples the results were averaged.
- (2) If the analyte was detected in one sample, and was qualified "B" or "R" in the other sample, the good value, not qualified "B" or "R", was used.
- (3) If the analyte was detected in only one sample and the detected value was greater than 1/2 the quantitation limit, the detected value was averaged with 1/2 the quantitation limit.

- (4) If the analyte was detected in only one sample and the detected value was less than 1/2 the quantitation limit, the detected value was used.

#### H.4 LABORATORY QUALITY CONTROL ASSESSMENT

All environmental samples collected at the Vermont ANG base were analyzed using the 3/90 EPA CLP Statement Of Work (SOW) for GC/MS analyses and EPA solid waste test methods and general chemical methodology from the following references:

- ***Statement of Work For Organic Analysis, Multi-Media, Multi-Concentration***, EPA Contract Laboratory Program, 3/90 (VOC, SVOC)
- ***Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods***, SW-846, Third Edition, September 1986, with 1989 revisions (VOC and TPH)
- ***Methods for Chemical Analyses of Water and Wastes***, EPA 600/4-79-020, EPA 1983, with revisions (TPH)
- ***Requirements for Quality Control of Analytical Data***, HAZWRAP, DOE/HWP-65/R1 6/90 (VOC, SVOC, priority pollutant metals, and TPH)
- ***Statement of Work for Inorganic Analyses, Multi-Media, Multi-Concentration***, EPA Contract Laboratory Program, 9/91 (TAL metals)

HAZWRAP Level C documentation was required and submitted by the laboratory for all analyses. All data were validated and qualified using the guidelines and specifications described in the following documents:

- ***National Functional Guidelines for Organic Data Review; Multi-Media, Multi-Concentration (OLMO1.0-OLMO1.6)***, EPA CLP, June 1992 (SVOC analyses)

- *Requirements for Quality Control of Analytical Data*, Hazardous Waste Remedial Actions Program (DOE/HWP-65/R2), July 1990 (VOC and TPH analyses)
- *Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses*, EPA Contract Laboratory Program, June 1988, (TAL metals analyses)

In addition to the above guidelines, additional steps were taken to make the data validation process clearer to the data user. The laboratory "J" qualifier, "B" qualifier for metals, was removed from detects below the quantitation limit and was replaced with a "( )" qualifier prior to validation. In addition, a "B" qualifier was used to indicate possible blank contamination. In these cases the 5x and 10x rule was applied.

All data validation qualifiers used were applied to the data as required by the aforementioned guidelines. A complete summary of all data obtained and the qualifiers applied to that data are presented in Appendix I.

## **APPENDIX I: DATA VALIDATION SUMMARIES**

DATA VALIDATION REPORT  
SEMIVOLATILE ORGANIC COMPOUND ANALYSES  
EPA CLP SOW 3/90 OLM01.9  
Case#: 29383 SDG#: 00007  
Burlington, Vermont

Samples:

V3B11113 V3B11113D V3B21113 V3B41315 V3B41315D V3B50305  
V4B10911 V4B11719 V4B21416 V4B21921 V4B31416 V4B31921  
V4B40911 V4B41719 V4B61921 V4B62426 V4BG0911 V4BG1416  
V4BG1416D V4BG1921

**I. Sample Holding Times:** Acceptable/All criteria met.

All samples were extracted within the required holding time of 14 days, and analyzed within the required holding time of 40 days. No action taken.

**II. GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

**III. Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable (< 30%) and were calculated correctly.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). The following compounds exhibited percent difference (%D) values greater than the required value of (+/-) 25% in the corresponding samples' analyses:

Samples V3B11113, V3B11113D, V3B21113, V3B41315, V3B41315D, V3B50305, V3B11113DL; 2,4,6-tribromophenol. Sample V4B11719; 2,2'-oxybis (1-Chloropropane), n-nitroso-di-n-propylamine, 2-nitroaniline.

Samples V4B10911, V4B21416, V4B21921, V4B31416, V4B31921, V4B40911, V4B41719, V4B61921, V4B62426; 4-nitrophenol, 3,3'-dichlorobenzidine, 2-fluorophenol. Samples V4BG0911, V4BG1416, V4BG1416D, V4BG1921; 2,2'-oxybis (1-Chloropropane),



Hexachlorobutadiene, hexachlorocyclopentadiene, 2-nitroaniline, 3-nitroaniline, hexachlorobenzene, butylbenzylphthalate, bis (2-ethylhexyl) phthalate, di-n-Octylphthalate.

None of the samples were found to contain concentrations of these compounds above CRDL, and no qualifiers were added to the data.

**IV. Blank Analyses: Acceptable.**

**Discussion:**

Method blanks were analyzed at the required frequency. No target analytes were detected in the associated method blanks. Qualifiers were not added to the data.

**V. Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

**VI. Matrix Spike / Matrix Spike Duplicate:**

All matrix spike analyses were within control limits, with one exception: Recovery for phenol in the matrix spike duplicate was 93%, outside QC limits of 26-90%. No detects were reported for phenol, and no qualifiers were added due to MS/MSD results alone

**VII. Internal Standards Performance: Acceptable.**

All criteria were met. No qualifiers added.

**Discussion:**

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of  $> 100\%$  or  $< 50\%$  of the continuing calibration internal standard area, and all internal retention times were within  $(+/-)$  30 seconds of the associated continuing calibration internal standard retention time.

**VIII. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

**IX. Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

**DATA VALIDATION REPORT  
SEMIVOLATILE ORGANIC COMPOUND ANALYSES  
EPA CLP SOW 3/90 OLM01.9  
Case#: 29249 SDG#: 00109  
BURLINGTON, VERMONT**

Samples: (Soil)

3BG13840D V3B10305 V3B20305 V3B30305 V3B31315  
V3B40305 V3B40810 V3B51315 V3BG10305 V3BG13840  
V4B50406 V4B50911 V4B51719

**I. Sample Holding Times: Acceptable/All criteria met.**

All samples were extracted within the required holding time of 14 days, and were analyzed within the required holding time of 40 days. No qualifiers were added to the data.

**II. GC/MS Instrument Performance Check: Acceptable/All criteria met.**

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

**III. Initial and Continuing Calibration:**

**Discussion:**

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable ( $< 30\%$ ) and were calculated correctly, with one exception: 4-chloroaniline was found to have %RSD  $> 30\%$ , but was not detected in any sample in concentration above CRDL. No qualifiers were added to the data.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable ( $> 0.05$ ). Many compounds were found to have %D  $> 25\%$  in many of the samples:

3BG13840D, V3BG10305, V3BG13840: 3,3'-dichlorobenzidine, Indeno-(1,2,3-cd)-pyrene, dibenzo-(a,h)-anthracene, and benzo-(g,h,i)-perylene.

V3B10305, V3B20305, V3B31315, V3B51315, V4B50406, V4B50911, V4B51719: bis-(2-chlorophenol) ether, 4-chloroaniline, 4,6-dinitro-2-methylphenol, N-nitroso-diphenylamine, 3,3'-dichlorobenzidine.

V3B30305, V3B40810, V4B51719DL: bis-(2-Chlorethyl)-ether, 2-Nitrophenol, 4-chloroaniline, 2,4-Dinitrophenol, 4,6-dinitro-2-methylphenol, N-nitrosodiphenylamine, 3,3'-dichlorobenzidine

V3B40305: 2,4-Dinitrophenol, 4,6-dinitro-2-methylphenol.

None of these compounds were detected in any sample at a concentration above CRDL, and no qualifiers were added to the data.

**IV. Blank Analyses: Acceptable.**

**Discussion:**

Method blanks were analyzed at the required frequency. Method blank results were reviewed, and compounds detected at concentrations which fell under the 5x/10x rule were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
3BG13840D	di-n-butylphthalate	B
V3B10305	di-n-butylphthalate	B
V3B20305	di-n-butylphthalate	B
V3B31315	di-n-butylphthalate	B
V3B51315	di-n-butylphthalate	B
V3BG10305	di-n-butylphthalate	B
V3BG13840	di-n-butylphthalate	B
V4B50406	di-n-butylphthalate	B
V4B51719	di-n-butylphthalate	B
V4B50911	di-n-butylphthalate	B

**V. Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

**VI. Matrix Spike / Matrix Spike Duplicate:**

Matrix Spike analysis indicated many compounds were outside of spike recovery requirements. Fourteen of 22 compounds were outside control limits, and 4 of 11 relative percent differences were outside of control limits.

No compounds outside control limits were detected in any of the samples, and no qualifiers were added to the data for MS/MSD results.

**VII. Internal Standards Performance: Acceptable.**

All criteria were met. No qualifiers were required.

**Discussion:**

Analysis of areas and retention times for internal standards was conducted. All internal standard areas were within the technical acceptance window of > 100% or < 50% of the continuing calibration internal standard area, All internal retention times were within ( +/- ) 30 seconds of the associated continuing calibration internal standard retention time.

**VIII. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

**IX. Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

**DATA VALIDATION REPORT  
SEMIVOLATILE ORGANIC COMPOUND ANALYSES  
EPA CLP SOW 3/90 OLM01.9  
Case#: 29249 SDG#: 00196  
BURLINGTON, VERMONT**

Sample:

V3BG11820

**I. Sample Holding Times: Acceptable/All criteria met.**

The sample was extracted within the required holding time of 14 days, and analyzed within the required holding time of 40 days. No action taken.

**II. GC/MS Instrument Performance Check: Acceptable/All criteria met.**

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

**III. Initial and Continuing Calibration:**

**Discussion:**

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable (< 30%) and were calculated correctly.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). Three compounds were found to be outside control limits for %D: indeno (1,2,3-cd) pyrene, dibenzo (a,h) anthracene, and benzo (g,h,i) perylene. None of these compounds were detected in the sample. No qualifiers were added to the data.

**IV. Blank Analyses: Acceptable.**

**Discussion:**

A method blank was analyzed at the required frequency. Di-n-butylphthalate was detected in the associated method blank. The concentration detected in the sample was less than 10 times the

concentration of the compound in the method blank, and as a result was qualified "B", blank contamination.

Sample ID #	Compound	Qualifier
V3BG11820	di-n-butylphthalate	B

**V. Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

**VI. Matrix Spike / Matrix Spike Duplicate:**

Matrix Spike analysis indicated that all compounds were within control limits for both %recovery and RPD. No qualifiers were added to the data based on MS/MSD results.

**VII. Internal Standards Performance: Acceptable.**

All criteria were met. No qualifiers were required.

**Discussion:**

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of > 100% or < 50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

**VIII. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

**IX. Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, and as qualified, and the data are acceptable for use.

**DATA VALIDATION REPORT  
SEMIVOLATILE ORGANIC COMPOUND ANALYSES  
EPA CLP SOW 3/90 OLM01.9  
Case#: 29249 SDG#: 00230  
BURLINGTON, VERMONT**

Samples:

3BG11094D ER1024941 FB102494P V3BG11094 V4BG11094 V4MW21094  
V4MW21094DL V4MW31094

**I. Sample Holding Times: Acceptable/All criteria met.**

All samples were extracted within the required holding time of 14 days, and all samples were analyzed within the required holding time of 40 days. No action taken.

**II. GC/MS Instrument Performance Check: Acceptable/All criteria met.**

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

**III. Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable ( $< 30\%$ ) and were calculated correctly, with one exception: dibenzo (a,h) anthracene. Dibenzo (a,h) anthracene was not detected in any of the samples. No qualifiers were added to the data.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable ( $> 0.05$ ). Four compounds exhibited a percent difference (%D) greater than the required value of  $(+/-) 25\%$ : 3,3'-dichlorobenzidine, indeno (1,2,3-cd) pyrene, dibenzo (a,h) anthracene, and benzo (g,h,i) perylene. Detected concentrations of these compounds were qualified "J", estimated, and non-detects were not qualified.

**IV. Blank Analyses: Acceptable.**

Discussion:

No analytes were detected in the associated method blanks. No qualifiers were added due to method blank results.



**V. Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

**VI. Matrix Spike / Matrix Spike Duplicate:**

Two compounds (naphthalene and 4-chloroaniline) were outside of control limits for relative percent difference in matrix spike/matrix spike duplicate analysis. In addition, spike recoveries were outside control limits for four compounds: hexachloroethane, N-nitroso-di-n-propylamine, naphthalene, and 4-chloroaniline. Detected concentrations for compounds with low spike recoveries (naphthalene and 4-chloroaniline) were qualified "J", estimated. Non-detects were qualified "UJ", not detected, estimated.

Sample ID #	Compound	Qualifier
V4MW21094	naphthalene	J
V4MW21094DL	naphthalene	J

**VII. Internal Standards Performance: Acceptable.**

All criteria were met. No qualifiers were required.

**Discussion:**

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of > 100% or < 50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

**VIII. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

**IX. Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

**DATA VALIDATION REPORT  
SEMIVOLATILE ORGANIC COMPOUND ANALYSES  
EPA CLP SOW 3/90 OLM01.9  
Case#: 29249 SDG#: 00268  
BURLINGTON, VERMONT**

Samples: (soil)

V4D1005    V4D1005D    V4D2005    V4D3005

**I.      Sample Holding Times:** Acceptable/All criteria met.

All samples were extracted within the required holding time of 14 days, and all samples were analyzed within the required holding time of 40 days. No action taken.

**II.     GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

**III.    Initial and Continuing Calibration:**

**Discussion:**

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable (< 30%) and were calculated correctly, with one exception: 2,4-Dinitrophenol. No detects were reported for 2,4-Dinitrophenol, and no qualifiers were added to the data.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). % Difference results for the analysis of sample V4D2005 were outside control limits for seven compounds: 4-chloroaniline, 2,4-dinitrophenol, 2,4-dinitrotoluene, 4,6-dinitro-2-methylphenol, n-nitrosodiphenylamine, 3,3'-dichlorobenzidine, and 2,4,6-tribromophenol. Detected concentrations of these compounds were qualified "J", estimated. Samples V4D1005, V4D1005D, and V4D3005 were found to have %D results outside control limits for eight compounds: 4-chloroaniline, hexacyclopentadiene, 2,4-dinitrotoluene, N-nitrosodiphenylamine, butylbenzylphthalate, 3,3'-dichlorobenzidine, bis-(2-ethylhexyl) phthalate, and di-n-octylphthalate. Non-detects for these compounds were not qualified. Detected concentrations for these compounds were qualified "J", estimated, as detailed below:

Sample ID #	Compound	Qualifier
V4D1005D	butylbenzylphthalate	J
V4D1005D	Di-n-octylphthalate	J

**IV. Blank Analyses: Acceptable.**

**Discussion:**

A method blank was analyzed at the required frequency. No compounds were detected in the method blank, and no qualifiers were added to the data.

**V. Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

**VI. Matrix Spike / Matrix Spike Duplicate:**

Matrix spike and matrix spike duplicate analysis indicated acenaphthene, 1,4-dichlorobenzene, and 1,2,4-trichlorobenzene outside of control limits for RPD, Pyrene and acenaphthene indicated low spike recoveries. No data were qualified on the basis of MS/MSD data alone.

Matrix spikes and duplicate matrix spikes were performed at a frequency of 5%.

**VII. Internal Standards Performance: Acceptable.**

All criteria were met. No qualifiers were required.

**Discussion:**

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of > 100% or < 50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

**VIII. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

**IX. Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

**DATA VALIDATION REPORT  
SEMIVOLATILE ORGANIC COMPOUND ANALYSES  
EPA CLP SOW 3/90 OLM01.9  
Case#: 29249 SDG#: 00297  
BURLINGTON, VERMONT**

**Samples:**

4SW31094D ER1028941 ER0128942 V3MW11094 V3MW31094  
V4SW31094

**I. Sample Holding Times: Acceptable/All criteria met.**

All samples were extracted within the required holding time of 14 days, and all samples were analyzed within the required holding time of 40 days. No action taken.

**II. GC/MS Instrument Performance Check: Acceptable/All criteria met.**

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

**III. Initial and Continuing Calibration:**

**Discussion:**

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable ( $< 30\%$ ) and were calculated correctly, with the following exception: dibenzo-(a,h)-anthracene was found to have a %D  $> 30\%$ . No sample contained the compound, and no qualifiers were added to the data due to initial calibration results.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable ( $> 0.05$ ). % Difference results for the analysis of samples V3MW11094, V3MW31094, and V4SW31094 were outside control limits for three compounds: indeno-(1,2,3-cd)-pyrene, dibenzo-(a,h)-anthracene, and benzo-(g,h,i)-perylene. None of the compounds were detected in the associated samples. No qualifiers were added to the data.

**IV. Blank Analyses: Acceptable.**

**Discussion:**

A method blank was analyzed at the required frequency. No compounds were detected in any associated method blank. No qualifiers were added to the data due to method blank contamination.

**V. Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

**VI. Matrix Spike / Matrix Spike Duplicate:**

Matrix spike and matrix spike duplicate analysis indicated no compounds outside control limits for RPD, but three compounds outside control limits for spike recoveries: isophorone, 1,2,4-trichlorobenzene, and naphthalene. Detected concentrations of these compounds were qualified "J", estimated, as detailed below:

Sample ID #	Compound	Qualifier
V3MW11094	naphthalene	J

**VII. Internal Standards Performance: Acceptable.**

**Discussion:**

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of > 100% or < 50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

**VIII. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

**IX. Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

**DATA VALIDATION REPORT  
VOLATILE ORGANIC COMPOUND ANALYSES  
EPA SW-846 / 8010/8020  
CASE#: 29274 SDG#: 00001  
BURLINGTON, VERMONT**

Samples: (water)

V3B1113	V3B1113D	V3B21113	V3B41315	V3B41315D	V3B50305
V4B11719	V4BG0911	V4BG1416	V4BG1416D	V4BG1921	V4B10911
V4B21416	V4B21921	V4B31416	V4B31921	V4B40911	V4B41719
V4B61921	V4B62426				

**I. Sample Holding Times:** Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for preserved water samples and soil samples. All samples were analyzed within 14 days of sampling. No action taken.

**II. GC/MS Instrument Performance Check:** Acceptable/All criteria were met.

Bromofluorobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

**III. Initial and Continuing Calibration:** Acceptable/All criteria were met with the following exceptions:

Relative response factors (RRF) and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable.

"J" qualifiers were added due to %D results in continuing calibrations for the following compounds:

Sample ID #	Compound	Qualifier
V4B21921	toluene	J (confirmation run)
V4B41719	toluene	J (confirmation run)
V4B11719	1,4-dichlorobenzene	J

Non-detects were not qualified.

IV. Blank Analyses: Acceptable/With the following exception

Discussion:

Method blank analysis indicated several compounds were present in the method blanks associated with the samples. Compounds detected in the samples were qualified "B", blank contamination, according to the 5x / 10x rule, as detailed below:

Sample ID #	Compound	Qualifier
V4B61921	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B62426	methylene chloride	B
	toluene	B
	p-xylene	B
	m-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B31416	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	styrene	B
	1,3-dichlorobenzene	B



	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B31921	methylene chloride	B
	ethylbenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B21416	methylene chloride	B
	styrene	B
	1,2-dichlorobenzene	B
V4B21921	methylene chloride	B
V4B40911	methylene chloride	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B10911	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4BG0911	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B

	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4BG1416	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4BG1416D	methylene chloride	B
V4BG1921	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
	Chlorobenzene	B
V3B50305	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
V3B41315D	methylene chloride	B

	chloroform	B
	1,1,1-trichloroethane	B
V3B21113	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
V3B1113	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
V3B1113D	methylene chloride	B
	1,1,1-trichloroethane	B
V3B41315	methylene chloride	B
	chloroform	B

**V. Surrogate Recovery:**

All surrogate spiking compounds recoveries were within control limits. No qualifiers were required.

**VI. Matrix Spike/Matrix Spike Duplicate:**

All Matrix Spike/Matrix Spike Duplicate results were acceptable. No qualifiers required.

**VII. Internal Standards Performance:** Acceptable / All criteria met. No qualifiers required,

**Discussion:**

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

**X. System Performance:** Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

**XI. Overall Assessment of The Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.

**DATA VALIDATION REPORT  
VOLATILE ORGANIC COMPOUND ANALYSES  
EPA SW-846 / 8010/8020  
CASE#: 29249 SDG#: 00122  
BURLINGTON, VERMONT**

**Samples:**

V3B40810 V3B30305 V3B20305 V3B31315 V3B10305 V3B40305  
V3B51315 V4B50406 V4B50911 V4B51719 V3BG10305  
V3BG13840 3BG13840D V3B40305DL

**I. Sample Holding Times:**

Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for soil samples. Confirmation analyses of halogenated compounds for samples V4B50406, V4B50911, and V4B51719 took place outside of holding time (> 33d.), and "R", unusable, qualifiers were added to nondetected results. Detected compounds in these samples were judged to agree in magnitude (comparing results from dual column analyses) such that the detected compounds were qualified "J", estimated.

**II. GC/MS Instrument Performance Check: Acceptable/All criteria were met.**

Bromofluorobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

**III. Initial and Continuing Calibration: Acceptable/All criteria were met with the following exceptions:**

Relative response factors (RRF) and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. All initial calibrations were within control limits, and no qualifiers were added to the data based on initial calibrations.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable. Two columns indicated compounds outside of control limits for %difference, but neither column analyzed environmental samples on the dates of calibration, and no qualifiers were added to data.

**IV. Blank Analyses: Acceptable/With the following exception:**

Discussion:

Method blanks were analyzed at the required frequency. Method blanks results were reviewed, and it was determined that common contaminants existed in many of the method blanks. Sample concentrations less than 5 x (10 x for common contaminants) concentrations found in corresponding method blanks were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
V3B40810	methylene chloride	B
V3B20305	methylene chloride	B
	toluene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,4-dichlorobenzene	B
V3B10305	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
	Benzene	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V3B40305	methylene chloride	B
	chloroform	B
V4B50406	methylene chloride	B
V4B50911	methylene chloride	B
V3BG10305	methylene chloride	B

	toluene	B
	p-xylene	B
	m-xylene	B
V3BG13840	toluene	B
	p-xylene	B
	m-xylene	B
3BG13840D	methylene chloride	B
	toluene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
V3B40305DL	toluene	B

**V. Surrogate Recovery:**

Surrogate recoveries were below control limits for three samples in halogenated compound analysis: V3B30305, V4B50406, and V4B51719. All halogenated organic compounds detected in these samples were qualified "J", estimated. Non-detected halogenated organic compounds were qualified "UJ", not detected, estimated. Surrogate recoveries were also found to be outside control limits in several aromatic organic compound analyses: Samples V3B40810, V3B51315, V4B51719, and V3B30305 all had surrogate recoveries > 125%. No qualifiers were added to the data based on the high surrogate recoveries of these samples.

**VI. Matrix Spike/Matrix Spike Duplicate:**

All Matrix Spike/Matrix Spike Duplicate results were acceptable. No qualifiers were added to the data.

**VII. Internal Standards Performance:** Acceptable/All criteria were met. No qualifiers required.

**Discussion:**

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

**VIII. Compound Identification: Acceptable.**

Compound identification was found to be acceptable.

**IX. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

**X. Overall Assessment of The Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.



**DATA VALIDATION REPORT  
VOLATILE ORGANIC COMPOUND ANALYSES  
EPA SW-846 / 8010/8020  
CASE#: 29249 SDG#: 00200  
BURLINGTON, VERMONT**

Sample:

V3BG11820

**I. Sample Holding Times:**

Acceptable/All criteria were met.

The sample was initially analyzed within the required holding time of 14 days for soil samples. No confirmation analysis was performed on the sample.

**II. GC/MS Instrument Performance Check: Acceptable/All criteria were met.**

Bromofluorobenzene (BFB) was analyzed at the beginning of the analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

**III. Initial and Continuing Calibration: Acceptable/All criteria were met with the following exceptions:**

Relative response factors (RRF) and percent relative standard deviations (%RSD) in initial calibration were technically acceptable and calculated correctly. Continuing calibrations were not required, as the initial calibration took place within the 12 hour window between initial calibration and sample analysis. No qualifiers were added to the data for calibration anomalies.

**IV. Blank Analyses: Acceptable/With the following exception**

Discussion:

Method blank analysis indicated the presence of several common laboratory solvents in the method blank associated with the sample. Sample concentrations lower than 5 times the blank concentration (or ten times blank concentration in the cases of Methylene chloride, acetone, toluene, and 2-butanone) were qualified "B", blank contamination. As a result of method blank contamination, all detected concentrations of target analytes were qualified "B":

Sample ID #	Compound	Qualifier
V3BG11820	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
	toluene	B

**V. Surrogate Recovery:**

All surrogate spiking compounds recoveries were within control limits. No qualifiers were required.

**VI. Matrix Spike/Matrix Spike Duplicate:**

All Matrix Spike/Matrix Spike Duplicate results were acceptable. No qualifiers required.

**VIII. Internal Standards Performance:**

Acceptable/All criteria were met. No qualifiers required.

**Discussion:**

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

**IX. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

**X. Overall Assessment of The Data:**

Based on the evaluation presented, the sample contained no target analyte above the CRQL. Several compounds were detected and qualified "B" due to method blank contamination. As qualified, these data are acceptable for use.

**DATA VALIDATION REPORT  
VOLATILE ORGANIC COMPOUND ANALYSES  
EPA SW-846 / 8010/8020  
SDG#: 00228  
BURLINGTON, VERMONT**

**Samples:**

ER1024941 FB102494P TB1024941 V3BG11094 V3BG11094D  
TB1024942 V4MW31094 TB1026941 V4BG11094 TB1025941  
TB1027941 V4MW21094

**I. Sample Holding Times:**

Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for preserved water samples. Confirmation analyses for samples FB102494P, TB1024941, V3BG11094, V3BG11094D, TB1024942, V4MW31094, TB1026941, V4BG11094, TB1025941, TB1027941, and V4MW21094 took place outside of holding time (ranging from 15 to 28 days.) "J", estimated, and "UJ", not detected, estimated, qualifiers were added to the data.

**II. GC/MS Instrument Performance Check: Acceptable/All criteria were met.**

Bromofluorobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

**III. Initial and Continuing Calibration: Acceptable/All criteria were met with the following exceptions:**

Relative response factors (RRF) and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable.

"J", estimated, qualifiers were added due to %D results in continuing calibrations for the following compounds in the following samples: V4MW31094; toluene. TB1025941; p-xylene, m-xylene. ER 1024941; 1,3-dichlorobenzene (by method 8020). FB102494P; chloromethane, 1,1,1-trichloroethane, dibromomethane. V3BG11094; 1,1,1-trichloroethane, trichloroethene. V3BG11094D; 1,1,1-trichloroethane. TB1024942; toluene.

Sample ID #	Compound	Qualifier
V4MW31094	toluene	J
TB1025941	p-xylene	J
	m-xylene	J
ER 1024941	1,3-dichlorobenzene	J
FB102494P	chloromethane	J
	1,1,1-trichloroethane	J
	dibromomethane	J
V3BG11094	1,1,1-trichloroethane	J
	trichloroethene	J
V3BG11094D	1,1,1-trichloroethane	J
TB1024942	toluene	J

**IV. Blank Analyses: Acceptable/With the following exception**

**Discussion:**

Method blanks were analyzed at the required frequency. Method blanks results were reviewed, and it was determined that low levels of common laboratory contaminants were found in many of the method blanks. "B", blank contamination, qualifiers were added to detected concentrations of these contaminants in the samples which were not  $> 5 \times$  ( $10 \times$  for common contaminants) the concentrations found in the method blanks:

Sample ID #	Compound	Qualifier
ER1024941	p-xylene	B
	m-xylene	B
FB102494P	methylene chloride	B
	toluene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
TB1024941	methylene chloride	B

	p-xylene	B
	m-xylene	B
V3BG11094	methylene chloride	B
	p-xylene	B
	m-xylene	B
3BG11094D	methylene chloride	B
	p-xylene	B
	m-xylene	B
TB1024942	methylene chloride	B
	p-xylene	B
	toluene	B
	m-xylene	B
V4MW31094	methylene chloride	B
TB1026941	methylene chloride	B
V4BG11094	methylene chloride	B
TB1025941	methylene chloride	B
TB1027941	methylene chloride	B
V4MW21094	methylene chloride	B

**V. Surrogate Recovery:**

All surrogate spiking compounds recoveries were within control limits. No qualifiers were required.

**VI. Matrix Spike/Matrix Spike Duplicate:**

Matrix Spike and Matrix Spike Duplicate Analysis results indicated several compounds slightly outside control limits in both halogenated (8010) and aromatic (8020) compound analyses. In the halogenated analyses, the compounds outside control limits were chloromethane, vinyl chloride, 1,1-dichloroethene, and carbon tetrachloride. In the aromatic compound analyses, compounds outside control limits were Benzene, ethylbenzene, o-xylene, m-xylene, and p-xylene.

No qualifiers were added to the data based on MS/MSD results.

**VII. Internal Standards Performance:**

Acceptable/All criteria were met. No qualifiers required.

**Discussion:**

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

**VIII. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

**IX. Overall Assessment of The Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.

**DATA VALIDATION REPORT  
VOLATILE ORGANIC COMPOUND ANALYSES  
EPA SW-846 / 8010/8020  
CASE#: 29249 SDG#: 00271  
BURLINGTON, VERMONT**

**Samples:**

V4D1005D V4D1005 V4D2005 V4D2005DL V4D3005

**I. Sample Holding Times:**

Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for soil samples.

No qualifiers were added to the data for exceeding holding times.

**II. GC/MS Instrument Performance Check: Acceptable/All criteria were met.**

Bromofluorobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

**III. Initial and Continuing Calibration: Acceptable/All criteria were met with the following exceptions:**

"J", estimated, qualifiers were added due to %D results in continuing calibrations for the following compounds in the listed samples:

V4D2005DL: methylene chloride

**Discussion:**

Relative response factors (RRF) and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable. No qualifiers were added to the data for undetected compounds for which calibration verification results exceeded control limits.

**IV. Blank Analyses: Acceptable/With the following exceptions:**

**Discussion:**

Method blanks were analyzed at the required frequency. Method blank results were reviewed, and it was determined that some method blank contamination existed. methylene chloride was detected in three method blanks, resulting in that compound being qualified "B", for blank contamination. Aromatic method blank VBLK7B contained toluene, xylenes, and Dichlorobenzenes, and detects for these compounds in sample V4D3005 less than 5 x (10 x for common contaminants) blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
V4D1005	methylene chloride	B
V4D4005	methylene chloride	B
V4D3005	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	1,2-dichlorobenzene	B

**V. Surrogate Recovery:**

Low surrogate recoveries were noted for several samples. The detected compounds in each of these samples were qualified "B", blank contamination, and no further qualification of any of the detected compounds in any sample was required.

**VI. Matrix Spike/Matrix Spike Duplicate:**

All Matrix Spike/Matrix Spike Duplicate results were acceptable. No qualifiers required, except as noted below:

**Discussion:**

All %recoveries for the matrix spike were found to be within control limits. No qualifiers were added to the data based on the results from the matrix spike analysis. MS duplicate results indicated two compounds with RPD results outside control limits, chloromethane and methylene chloride. In sample V4D2005, methylene chloride concentration was qualified "J", estimated. No other compounds were detected (which were not blanked out) in any of the samples.



**VII. Internal Standards Performance:**

Acceptable/All criteria were met. No qualifiers required.

**Discussion:**

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

**VIII. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

**IX. Overall Assessment of The Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.

**DATA VALIDATION REPORT  
VOLATILE ORGANIC COMPOUND ANALYSES  
EPA SW-846 / 8010/8020  
SDG#: 00296  
BURLINGTON, VERMONT**

**Samples:**

TB1028942 TB1028941 TB1028943 ER1028941 ER1028942 V4SW31094  
4SW31094D TB103194 V3MW11094 V3MW31094  
V3MW11094DL

**I. Sample Holding Times:**

Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for preserved water samples, with four exceptions: Samples TB103194, V3MW11094, V3MW31094, and V3MW11094DL were initially analyzed for aromatic organics (method 8020) outside of holding time limits, by a maximum of two days. Confirmation analyses for all samples, in both halogenated and aromatic organic analyses took place outside of holding time limits (ranging from one day out to eleven days out). "J", estimated, and "UJ", not detected, estimated, qualifiers were added to the data.

**II. GC/MS Instrument Performance Check: Acceptable/All criteria were met.**

Bromofluorobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

**III. Initial and Continuing Calibration: Acceptable/All criteria were met with the following exceptions:**

Relative response factors (RRF) and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. No qualifiers were added to the data for initial calibrations.

Calibration Verifications were performed at the proper frequency, and all RRF were technically acceptable. Several instruments were found to have %D outside control limits for various compounds. Detected concentrations of these compounds were qualified "J", estimated. Non-detects for these compounds were not qualified.

Sample ID #	Compound	Qualifier
TB1028942	chloromethane	J
V4SW31094	1,3-dichlorobenzene	J
	1,2-dichlorobenzene	J
4SW31094D	1,3-dichlorobenzene	J (confirmation)
	1,2-dichlorobenzene	J (confirmation)
V3MW31094	1,2-dichlorobenzene	J (confirmation)

**IV. Blank Analyses:** Acceptable/With the following exceptions:

**Discussion:**

Method blanks were analyzed at the required frequency. All of the method blanks for the halogenated analyses were found to contain the common solvent methylene chloride in small concentrations, and samples containing less than 10 times the concentration found in the associated method blank were qualified "B", blank contamination. Aromatic blank results indicated blank contamination with a variety of compounds in several of the method blanks at low concentrations. Detects for these compounds in the samples which fell under the 5x/10x rule were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
TB1028942	methylene chloride	B
	chloroform	B
	toluene	B
TB1028941	methylene chloride	B
TB1028943	methylene chloride	B
	toluene	B
ER1028941	methylene chloride	B
	toluene	B
ER1028942	methylene chloride	B
	toluene	B
V4SW31094	methylene chloride	B
	toluene	B

4SW31094D	methylene chloride	B
	toluene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
TB103194	methylene chloride	B
	p-xylene	B
	m-xylene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V3MW11094	methylene chloride	B
	1,3-dichlorobenzene	B
V3MW31094	methylene chloride	B
	p-xylene	B
	m-xylene	B

**V. Surrogate Recovery:**

Four samples were found to have aromatic surrogate recoveries outside of control limits: TB1028941, TB1028943, ER1028942, and V4SW31094. All of these samples had slightly low surrogate recoveries for BFB2. Accordingly, all non-detects for these samples were qualified "UJ", not detected, estimated, and detects were qualified "J", estimated.

**VI. Matrix Spike/Matrix Spike Duplicate:**

A number of compounds were found to have RPDs outside control limits in matrix spike duplicate analysis: 1,1-dichloroethene, methylene chloride, trans-1,2-Dichloroethene, Chlorobenzene, 1,1,2,2-TCA, p-xylene, m-xylene, and Methyl-t-butyl ether. No qualifiers were added to the data on the basis of MS/MSD analysis alone.

**VIII. Internal Standards Performance:**

Acceptable/All criteria were met. No qualifiers required.

Discussion:

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

**IX. Compound Identification: Acceptable.**

Compound identification was found to be acceptable.

**X. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

**XI. Overall Assessment of The Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.

DATA VALIDATION REPORT  
SEMIVOLATILE ORGANIC COMPOUND ANALYSES  
EPA CLP SOW 3/90 OLM01.9  
Case#: 29249 SDG#: 00230  
BURLINGTON, VERMONT

Samples:

3BG11094D ER1024941 FB102494P V3BG11094 V4BG11094 V4MW21094  
V4MW21094DL V4MW31094

**I. Sample Holding Times:** Acceptable/All criteria met.

All samples were analyzed within the required holding time of 40 days. No action taken.

**II. GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

**III. Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All Percent Relative Standard Deviations (%RSD) in initial calibrations were technically acceptable (< 30%), with one exception: The initial calibration check for samples V4BG11094, V4MW21094, V4MW21094DL, and V4MW31094 indicated one compound with %RSD > 30, dibenzo (a,h) anthracene. Dibenzo (a,h) anthracene was not detected in any sample. Non-detects were not qualified.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). Continuing calibrations for V4BG11094, V4MW21094, V4MW21094DL, and V4MW31094 indicated 4 compounds with a percent difference (%D) greater than the required value of (+/-) 25%: 3,3'-dichlorobenzidine, indeno (1,2,3-cd) pyrene, dibenzo (a,h) anthracene, and benzo (g,h,i) perylene. As no concentrations of these compounds were found in any of the associated samples, no qualifiers were added to the data.

**IV. Blank Analyses:** Acceptable.

Discussion:

No analytes were detected in the associated method blanks. No qualifiers were added to the data.

**V. Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

**VI. Matrix Spike / Matrix Spike Duplicate:**

Spike Recoveries were outside of control limits for four compounds, and RPD for two compounds were also outside of control limits. The compounds naphthalene and 4-chloroaniline had low percent recoveries, and were qualified "J", estimated, or "UJ", not detected, estimated. The other compounds, hexachloroethane and n-nitroso-di-n-propylamine, indicated high recoveries of spiking compounds, and therefore were not qualified on the basis of MS/MSD data.

**VII. Field Duplicates: N/A**

**VIII. Internal Standards Performance: Acceptable.**

All criteria were met. No qualifiers were required.

**Discussion:**

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of  $> 100\%$  or  $< 50\%$  of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

**IX. System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

**X. Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 49238D  
BURLINGTON, VERMONT**

**Samples:**

3BG11094F BG11094F 4MW31094F 4BG11094F 4MW21094F

**I. Sample Holding Times: Acceptable/All criteria were met.**

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated six compounds were detected: aluminum (50.0 ug/l), calcium (11.8 ug/l), iron (42.0 ug/l), silver (3.6 ug/l), sodium (233 ug/l), and arsenic (2.2 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination.



Sample ID #	Compound	Qualifier
3BG11094F	Al	B
	Cr	B
	Fe	B
BG11094DF	Al	B
	Fe	B
4MW31094F	Al	B
	Fe	B
4BG11094F	Al	B
4MW21094F	Al	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and all %recoveries were found to be within control limits of 75-125%. No qualifiers were added to the data.

**VI. Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of four compounds: arsenic (158.8%), iron (151.3%), selenium (46.8%), and cadmium (53.1%). Compounds with high spike recoveries were not qualified, and compounds with low spike recoveries were qualified "UJ", not detected, estimated.

**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits, with two exceptions: arsenic (30.0%D) and zinc (200.0%D). Detected concentrations of these compounds were qualified "J", estimated.

Sample ID #	Compound	Qualifier
4MW21094F	As	J
	Zn	J

**IX. ICP Serial Dilution:**

Serial dilution was performed on sample 4MW21094FL for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with three exceptions: aluminum (397%D), potassium (100.0%D), and zinc (100.0%D). No qualifiers were added to the data based on serial dilution results.

**XIII. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT**  
**INORGANIC TOTAL METALS ANALYSES**  
**EPA CLP SOW 3/90 OLM03.0: Priority Pollutants**  
**Case#: 50071 SDG#: 49317D**  
**BURLINGTON, VERMONT**

**Samples:**

3MW11094F 3MW31094F

**I. Sample Holding Times: Acceptable/All criteria were met.**

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All percent recoveries were within control limits for all initial calibrations, and no qualifiers were added to the data based on initial calibration data.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated four compounds were detected: aluminum (62.1 ug/l), calcium (11.8 ug/l), iron (42.0 ug/l), and sodium (309.1 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination.

Sample ID #	Compound	Qualifier
3MW11094F	Al	B
	Fe	B
3MW31094F	Al	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and produced %recoveries within control limits for all analytes. No qualifiers were added to the data.

**VI. Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of four compounds: arsenic, cadmium, selenium, and thallium. In the case of cadmium and selenium, which had low recoveries, detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated. In the case of aluminum, high recovery required no qualifiers added to aluminum data. thallium had %recovery of 15.5%, necessitating attachment of "R", unusable, qualifiers to the data for thallium.

Sample ID #	Compound	Qualifier
3MW11094F	Cd	UJ
	Se	UJ
	thallium	R
3MW31094F	Cd	UJ
	Se	UJ
	thallium	R

**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits, with four exceptions: cobalt (200.0%RPD), iron (22.2%RPD), nickel (21.4% RPD), and zinc (200.0%RPD). Detected concentrations of these elements were qualified "J", estimated.

Sample ID #	Compound	Qualifier
3MW11094F	Co	J
	Ni	J

### VIII. ICP Serial Dilution:

Serial dilution was performed on sample 3MW11094FL for ICP analysis. Adjusted sample concentrations were within control limits for all analytes. No qualifiers were added to the data.

## IX. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT**  
**INORGANIC TOTAL METALS ANALYSES**  
**EPA CLP SOW 3/90 OLM03.0: Priority Pollutants**  
**Case#: 50071 SDG#: 924913**  
**BURLINGTON, VERMONT**

**Samples:**

V3B11113	V3B11113D	V3B21113	V3B41315D	V3B41315	V3B50305
V4B10911	V4B11719	V4B21416	V4B21921	V4B31416	V4B31921
V4B40911	V4B41719	V4B61921	V4B61921	V4B62426	V4BG0911
V4BG1416	V4BG1416D	V4BG1921			

**I. Sample Holding Times: Acceptable/All criteria were met.**

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibration error.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated one compound was detected: sodium. All samples contained detects for sodium, and all concentrations less than 5x blank concentration were qualified "B", blank contamination. No other qualifiers were added to the data for blank contamination.

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and produced %recoveries outside of the 75-125% control limits for one element, potassium. All potassium concentrations in the samples were qualified "J", estimated.

**VI. Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of antimony, which had  $\%R < 75\%$ . No detects for antimony were reported in any sample, and all data for antimony was qualified "UJ", not detected, estimated.

**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits. No qualifiers were added to the data.

**VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.**

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%, and all results were within control limits. No qualifiers were added to the data.

**IX. ICP Serial Dilution:**

Serial dilution was performed on sample V4BG0911L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with the exception of six compounds. None of these compounds were detected in any sample at  $> 50$  times IDL. No qualifiers were added to the data.

**X. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 924913  
BURLINGTON, VERMONT**

**Samples:**

V4D1005    V41005D    V4D2005    V4D3005

**I. Sample Holding Times: Acceptable/All criteria were met.**

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated eight compounds were detected: calcium (96.6 ug/l), iron (20.6 ug/l), aluminum (53.9 ug/l), potassium ((2945.6 ug/l), silver (7.3 ug/l), beryllium (2.1 ug/l), chromium (7.7 ug/l), and copper (18.0 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination.

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and all %recoveries were within control limits. No qualifiers were added to the data.



**VI. Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of four elements: antimony (59.5%R), arsenic (125.1%R), lead (9999.9%R), and manganese (123.5%R). antimony data were qualified "UJ", not detected, estimated. Data for lead, arsenic, and manganese were qualified "J", estimated, where the element was detected, and "UJ", not detected, estimated, where not detected.

**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits for all but eight elements: beryllium (200.0%), chromium (59.6%), manganese 63.2%, mercury (200.0%), potassium (200.0%), calcium (93.1%), lead (98.0%), and silver (91.4%). Detected concentrations of these elements were qualified "J", estimated.

**VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.**

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. antimony and cadmium exceeded control limits for the post-digestion spike recovery.

**IX. ICP Serial Dilution:**

Serial dilution was performed on sample V4D2005L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes.

**X. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 924913  
BURLINGTON, VERMONT**

**Samples:**

V4D1005    V41005D    V4D2005    V4D3005

**I. Sample Holding Times: Acceptable/All criteria were met.**

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated eight compounds were detected: calcium (96.6 ug/l), iron (20.6 ug/l), aluminum (53.9 ug/l), potassium ((2945.6 ug/l), silver (7.3 ug/l), beryllium (2.1 ug/l), chromium (7.7 ug/l), and copper (18.0 ug/l). Results greater than the IDL and less than 5 times blank concentration were qualified "B".

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and all %recoveries were within control limits. No qualifiers were added to the data.

**VI. Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of four elements: antimony (59.5%R), arsenic (125.1%R), lead (9999.9%R), and manganese (123.5%R). antimony data were qualified "UJ", not detected, estimated. Data for lead, arsenic, and manganese were qualified "J", estimated, where the element was detected, and "UJ", not detected, estimated, where not detected.

**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits for all but eight elements: beryllium (200.0%), chromium (59.6%), manganese 63.2%, mercury (200.0%), potassium (200.0%), calcium (93.1%), lead (98.0%), and silver (91.4%). Detected concentrations of these elements were qualified "J", estimated.

**VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.**

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. antimony and cadmium exceeded control limits for the post-digestion spike recovery.

**IX. ICP Serial Dilution:**

Serial dilution was performed on sample V4D2005L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes.

**X. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 249161  
BURLINGTON, VERMONT**

**Samples:**

V4B40810 V3B30305 V3B20305 V3B31315 V3B10305  
V3B40305 V3B51315 V4B50406 V4B50911 V4B51719  
V3BG10305 V3BG13840 3BG13840D

**I. Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated two compounds were detected: calcium (47.7 ug/l) and cobalt (4.6 mg/Kg). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination. Results < 50 x IDL were not qualified. No detects for calcium were qualified. The following samples were qualified "B" for cobalt: V4B40810, V3B30305, V3B20305, V3B31315, V3B10305, V3B40305, V3B51315, V4B50406, V4B50911, V4B51719, V3BG10305, V3BG13840, 3BG13840D.

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and all %recoveries were found to be within control limits. No qualifiers were added to the data.

**VI. Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of antimony (66.3%R), lead (125.5%R), and selenium (59.9%R). Sample detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated.

**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits, with one exception: sodium had RPD of 200%. No detects for sodium were reported, and no qualifiers were added to the data.

**VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.**

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%.

**IX. ICP Serial Dilution:**

Serial dilution was performed on sample V3B40810L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes. No qualifiers were added to the data.

**X. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 249212  
BURLINGTON, VERMONT**

**Sample: (soil)**

**V3BG11820**

**I. Sample Holding Times: Acceptable/All criteria were met.**

The sample was analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated one compound was detected: cobalt (8.6 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination.

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and produced %recoveries outside of the 80-120% control limits for five elements: silver (77.0%), selenium (74.7%), arsenic (79.7%), sodium (315.2%), and thallium (75.6%). No qualifiers were added to the data.

**VI. Spike Sample Analyses:**

Spike results for soil samples were acceptable with the exception of antimony and cadmium, both of which had %R < 75%. Sample detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated.

**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits, with one exception: potassium indicated %RPD of 44.8%, and the detected concentration was qualified "J", estimated.

**VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.**

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. cadmium was outside of control limits in post-digestion spike analysis, with %R of 61.2%. Data for cadmium was qualified "UJ", not detected, estimated.

**IX. ICP Serial Dilution:**

Serial dilution was performed on sample V3BG11820L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with the following exceptions: Barium (15.0%D), chromium (100.0%D), copper (24.2%D), nickel (100.0%D), potassium (100.0%D), sodium (473.3%D), and zinc (55.7%D). Data for these elements were qualified "J", estimated.

**X. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 293773  
BURLINGTON, VERMONT**

**Sample:**

PT-092994

**I. Sample Holding Times:** Acceptable/All criteria were met.

The sample was analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The sample was analyzed for mercury within the required holding time of 28 days.

**II. Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated fourteen compounds were detected: calcium (51.4 ug/l), iron (17.99 ug/l), aluminum (61.35 ug/l), barium (0.3 ug/l), arsenic (2.1 ug/l), beryllium (0.1 ug/l), copper (0.8 ug/l), lead (1.65 ug/l), magnesium (28.3 ug/l), manganese (0.433 ug/l), potassium (25.9 ug/l), thallium (3.7 ug/l), zinc (1.82 ug/l), and sodium (256.5 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:



Sample ID #	Compound	Qualifier
PT092994	As	B
	Cd	B
	Cr	B
	Co	B
	Pb	B
	Ni	B
	Vanadium	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and produced %recoveries within control limits for all compounds. No qualifiers were added to the data.

**VI. ICP Serial Dilution:**

Serial dilution was performed on sample PT-092994L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with the exception of four: arsenic (114.4%), cadmium (100.0%), lead (100.0%), and chromium (49.8%). All of these compounds were qualified "B", blank contamination, making further qualification unnecessary.

**VII. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT**  
**INORGANIC TOTAL METALS ANALYSES**  
**EPA CLP SOW 3/90 OLM03.0: Priority Pollutants**  
**Case#: 50071 SDG#: 274324**  
**BURLINGTON, VERMONT**

**Samples:**

FB1011941 ER1008941 ER1009942 ER1009943 ER1009944

**I. Sample Holding Times: Acceptable/All criteria were met.**

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated seven compounds were detected: calcium (11.1 ug/l), iron (20.18 ug/l), aluminum (57.9 ug/l), barium (0.6 ug/l), silver (6.3 ug/l), beryllium (0.6 ug/l), and sodium (184.62 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
FB1011941	Al	B
ER1008941	Al	B
	Ba	B
	Ca	B

	Na	B
ER1009942	Al	B
	Ba	B
	Ca	B
	Na	B
ER1009943	Al	B
	Ba	B
	Ca	B
	Na	B
ER1009944	Al	B
	Ba	B
	Ca	B
	Na	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 90-110% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and produced %recoveries within control limits for all analytes. No qualifiers were added to the data.

**VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.**

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. antimony and cadmium exceeded control limits for the post-digestion spike recovery.

**IX. ICP Serial Dilution:**

Serial dilution was performed on sample FB1011941L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with two exceptions: aluminum (235.2%D) and potassium (100.0%D). Non-detected results for potassium were qualified "UJ", not detected, estimated.

**X. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 927495  
BURLINGTON, VERMONT**

**Samples:**

ER0912941 ER0912942 ER0921941 FB092194

**I. Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated five compounds were detected: aluminum (100.7 ug/l), beryllium (1.0 ug/l), cobalt (8.3 ug/l), magnesium (43.7 ug/l), and sodium (315.5 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
ER0912941	Al	B
	Na	B
ER0912942	Al	B
	Na	B
ER0921941	Al	B
	Na	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

All compounds were within control limits in LCS analysis. No qualifiers were added to the data.

**VI. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits. No qualifiers were added to the data.

**VII. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 924968  
BURLINGTON, VERMONT**

**Samples:**

FB090894R FB090894D ER0908941 \* ER0913941 ER0913942 ER0920941

\* = no data for this sample was found in the data package

**I. Sample Holding Times: Acceptable/All criteria were met.**

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated five compounds were detected: aluminum (108.9 ug/l), beryllium (1.0 ug/l), cobalt (8.3 ug/l), magnesium (43.7 ug/l), and sodium (375.7 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
FB090894D	Al	B
	Na	B
ER0913941	Al	B
	Na	B
ER0913942	Al	B
	Na	B
ER0920941	Al	B
	Na	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

All LCS results were within control limits. No qualifiers were added to the data.

**VI. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.



**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 274105  
BURLINGTON, VERMONT**

**Sample:**

ER0926941

**I. Sample Holding Times: Acceptable/All criteria were met.**

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated three compounds were detected: aluminum (48.5 ug/l), cobalt (9.5 ug/l), and sodium (197.2 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
ER0926941	Al	B
	Na	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

All results of LCS analysis were within control limits. No qualifiers were added to the data.

**VI. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT**  
**INORGANIC TOTAL METALS ANALYSES**  
**EPA CLP SOW 3/90 OLM03.0: Priority Pollutants**  
**Case#: 50071 SDG#: 249300**  
**BURLINGTON, VERMONT**

**Samples:**

4SW31093D ER1028941 ER1028942 V3MW11094 V3MW31094  
V4SW31094 V4SW31094D V4SW31094S

**I. Sample Holding Times: Acceptable/All criteria were met.**

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration: Acceptable/All criteria were met.**

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses: Acceptable/With the following exceptions:**

Method and Preparation blank analysis indicated three compounds were detected: calcium (11.8 ug/l), iron (92.0 ug/l), and sodium (197.2 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
ER1028941	Ca	B
	Na	B
ER1028942	Ca	B
	Fe	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and all %recoveries were within control limits. No qualifiers were added to the data.

**VI. Spike Sample Analyses:**

Spike results for water samples were acceptable with the exception of four compounds: arsenic (133.2%), beryllium (130.7%), thallium (31.8%), and zinc (40.4%). For low spike recoveries (Th, Zn) sample detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated. For high spike recoveries (As, Be), no qualifiers were added to the data:

Sample ID #	Compound	Qualifier
4SW31094D	As	J
	Zn	J
	Th	UJ
ER1028942	Zn	J
	Th	UJ
ER1028942	Zn	J
	Th	UJ
V3MW11094	Zn	J
	Th	UJ
V3MW31094	Zn	J
	Th	UJ
V4SW31094	Zn	J
	Th	UJ
V4SW31094D	Zn	J
	Th	UJ
V4SW31094S	Zn	J

	Th	J
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**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits. No qualifiers were added to the data.

**IX. ICP Serial Dilution:**

Serial dilution was performed on sample V4SW31094L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with two exceptions: aluminum (150.4%D) and copper (100.0%D). No detects for copper > 50 x IDL were found and no qualifiers were added to the data for copper. Detected concentrations of aluminum > 50 times IDL were qualified "J", estimated, in samples V3MW11094, V3MW31094, and V4SW31094S.

**X. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT**  
**INORGANIC TOTAL METALS ANALYSES**  
**EPA CLP SOW 3/90 OLM03.0: Priority Pollutants**  
**Case#: 50071 SDG#: 249280**  
**BURLINGTON, VERMONT**

**Samples:**

V4D1005    V41005D    V4D2005    V4D3005

**I. Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from sampling to metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses:** Acceptable/With the following exceptions:

Eight compounds were detected in method and preparation blank analysis: calcium (96.6 ug/l), iron (20.6 ug/l), aluminum (53.9 ug/l), potassium ((2945.6 ug/l), silver (7.3 ug/l), beryllium (2.1 ug/l), chromium (7.7 ug/l), and copper (18.0 ug/l). Results greater than IDL and less than 5 times the blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
V4D1005	Co	B
	Cu	B
	Ag	B
	Na	B

V4D1005D	Co	B
	Cu	B
	Ag	B
	Na	B
V4D2005	Be	B
	Cr	B
	Cu	B
	Ag	B
	Na	B
	Cu	B
	K	B
V4D3005	Cr	B
	Co	B
	Pb	B
	Na	B
	Cu	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and all %recoveries were within control limits. No qualifiers were added to the data.

**VI. Spike Sample Analyses:**

Spike results for soil samples were acceptable with the following exceptions: antimony (59.5%R), arsenic (125.1%R), lead (9999.9%R), and manganese (123.5%R). Antimony data were qualified "UJ", not detected, estimated. Detects for lead, arsenic, and manganese were qualified "J", estimated. Non-detects were not qualified.

Sample ID #	Compound	Qualifier
V4D1005	Pb	J
	Mn	J
	Sb	UJ
	As	UJ
	As	UJ
V4D1005D	Pb	J
	Mn	J
	Sb	UJ
	As	UJ
V4D2005	Pb	J
	Mn	J
	Sb	UJ
	As	UJ
V4D3005	Pb	J
	Mn	J
	As	UJ
	Sb	UJ

**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits for all but eight elements: beryllium (200.0%), chromium (59.6%), manganese 63.2%, mercury (200.0%), potassium (200.0%), calcium (93.1%), lead (98.0%), and silver (91.4%). Detects for these elements were qualified "J", estimated.

Sample ID #	Compound	Qualifier
V4D1005D	Cr	J
	Ca	J
	Pb	J
V4D2005	Hg	J



	Ca	J
	Pb	J
V4D1005	Ca	J
	Pb	J
V4D3005	Ca	J
	Pb	J

**VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.**

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. All results were within control limits for the post-digestion spike recovery.

**IX. ICP Serial Dilution:**

A serial dilution was performed on sample V4D2005L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes.

**X. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

**DATA VALIDATION REPORT  
INORGANIC TOTAL METALS ANALYSES  
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants  
Case#: 50071 SDG#: 249236  
BURLINGTON, VERMONT**

**Samples:**

ER1024941 FB102494P V3BG11094 3BG11094D V4MW31094  
V4BG11094  
V4MW21094

**I. Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

**II. Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

**III. Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated four compounds were detected: calcium (14.0 ug/l), iron (42.0 ug/l), arsenic (2.2 ug/l) and sodium (215.7 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID	Compound	Qualifier
ER1024941	Al	B
	Fe	B
	Na	B
FB102494P	Al	B
V3BG11094	As	B
3BG11094D	As	B
V4BG11094	As	B

**IV. ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

**V. Laboratory Control Sample (LCS) Analyses:**

LCS analysis indicated all recoveries within control limits. No qualifiers were added to the data.

**VI. Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the following exceptions: aluminum (47.9%), cadmium (64.0%), selenium (38.1%) lead (57.1%), thallium (0.0%). Sample detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated for these five elements. Iron and arsenic reported high spike recoveries. Qualifiers were not added for these elements.

Sample ID #	Compound	Qualifier
ER1024941	Cd	UJ
	Pb	UJ
	Se	UJ
	Th	R
FB102494P	Cd	UJ
	Pb	J

	Se	UJ
	Th	R
V3BG11094	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R
3BG11094D	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R
V4MW31094	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R
V4BG11094	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R
V4MW21094	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R

**VII. Duplicate Sample Analyses: Acceptable.**

Relative percent differences for soil samples were within the required control limits. No qualifiers were added to the data.

**VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.**

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. cadmium exceeded control limits for the post-digestion spike recovery. No qualifiers were added to the data.

**IX. ICP Serial Dilution:**

Serial dilution was performed on sample V4MW21094L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes.

**X. Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT  
TOTAL PETROLEUM HYDROCARBONS  
CALIFORNIA L.U.F.T. MODIFIED 8015  
CASE # 29249

SDG #S: 00135, 00019, 00232, 00277, 00234, 0148M, 00148,  
00025, 00208, 00274, 00204, 00299, 00298, 0025M, 00135  
BURLINGTON, VERMONT

Samples

SDG 00135

V3B40810 V3B30305 V3B20305 V3B31315 V3B10305  
V3B40305 V3B51315 V3B50406 V4B50911 V4B51719  
V3BG10305 V3BG13840 3BG13840D

SDG 0025M

V4B11719 V3B41315 V3B41315D V3B21113 V3B11113 V3B11113D

SDG 00298

ER1028941 ER1028942 V4SW31094 4SW31094D V3MW11094 V3MW31094

SDG 00299

ER1028941 ER1028942 V4SW31094 4SW31094D V3MW11094 V3MW31094

SDG 00204

V3BG11820

SDG 00274

V4D3005 V4D2005 V4D1005 V4D1005D

SDG 00208

V3BG11320

SDG 00025

V4B61921 V4B62426 V4B31416 V4B31921 V4B21416 V4B21921  
V4B40911 V4B41719 V4B10911 V4BG0911 V4BG1416 V4BG1416D  
V4BG1921 V3B50305

SDG 00148

V3B20305 V3B10305 V3B40305 V4B50406 V4B50911 V3BG10305  
V3BG13840 3BG13840D

SDG 0148M

V3B40810 V3B30305 V3B31315 V3B51315 V4B51719

SDG 00234

ER1024941 FB102494P V3BG11094 3BG11094D V4MW31094  
V4BG11094 V4MW21094

**SDG 00277**

V4D3005 V4D2005 V4D1005 V4D1005D

**SDG 00232**

ER1024941 FB102494P V3BG11094 3BG11094D V4MW31094  
V4BG11094 V4MW421094

**SDG 00019**

V4B61921 V4B62426 V4B31416 V4B31921 V4B21416 V4B21921  
V4B40911 V4B41719 V4B10911 V4BG0911 V4BG1416 V4BG1416D  
V4BG1921 V3B50305

**I. Sample Holding Times: Acceptable/All criteria met**

All water samples were analyzed within the required holding time of 28 days. All soil samples were analyzed within 28 days of sampling.

**II. Calibration: Acceptable/All criteria met**

A five point standard calibration bracketed the samples of each SDG analyzed. The correlation coefficient in each package was verified to be greater than the required coefficient of 0.995.

**III. Surrogate Recovery: Acceptable/With the following exceptions**

Surrogate recoveries were outside control limits for the following samples:

**SDG 0148M**

V3B40810 V3B30305 V3B31315 V3B51315 V4B51719

**SDG 00274**

V4D2005 V4D1005 V4D1005D

**SDG 00299**

4SW31029D

**SDG 0025M**

V4B11719 V3B41315 V3B41315D V3B21113 V3B11113  
V3B11113D

Detected concentrations of TPH in these samples were qualified "J".

**V. Blank Analysis: Acceptable/With the following exceptions**

Method, trip, and field blanks were analyzed at the required frequency. Field blanks and equipment rinsates associated with the water and soil samples did not report detects for TPH. TPH was detected in the method blanks associated with one water and one soil SDG. The following samples were qualified "B".

SDG 00234 - Diesel in the method blank  
ER1024941 FB102494 V4MW21094

SDG 00135  
V3B20305 V3B10305 V4B50406 V4B50911 V3BG10305  
V3BG13840 V3BG13840D



**APPENDIX J:      LABORATORY ANALYTICAL DATA  
AND CHAIN OF CUSTODY FORMS**

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**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: SAMPLE ID: COLLECTION DATE: ASSOCIATED QC:	V3-B1		V3-B1-1113		V3-B1-1113D		V3-B2		V3-B2-1113		V3-B3	
	V3-B1-0305		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94	
CRITERIA UNITS:	RESULT		QUAL		RESULT		QUAL		RESULT		QUAL	
	Organic Compounds by 8010											
Halogenated Volatile Organic Compounds by 8010	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
1,1,1,2-Tetrachloroethane	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ
1,1,1-Trichloroethane	0.07	(B)	0.32	(B)	0.35	(B)	3	U	0.38	(B)	16	UJ
1,1,2,2-Tetrachloroethane	0.65	U	3.40	U	3.60	U	0.66	U	3.50	U	3.40	UJ
1,1,2-Trichloroethane	0.92	U	4.80	U	5.10	U	0.93	U	4.90	U	4.90	UJ
1,1-Dichloroethane	0.82	U	4.30	U	4.50	U	0.82	U	4.40	U	4.30	UJ
1,1-Dichloroethene	0.92	U	4.80	U	5.10	U	0.93	U	4.90	U	4.90	UJ
1,2,3-Trichloropropane	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ
1,2-Dibromoethane (Ethylene di	1.40	U	7.40	U	7.70	U	1.40	U	7.60	U	7.50	UJ
1,2-Dichlorobenzene	1.50	U	8	U	8.30	U	1.50	U	8.10	U	8	UJ
1,2-Dichloroethane	0.71	U	3.70	U	3.90	U	0.71	U	3.80	U	3.70	UJ
1,2-Dichloropropane	0.71	U	3.70	U	3.90	U	0.71	U	3.80	U	3.70	UJ
1,3-Dichlorobenzene	1.20	U	6.20	U	6.50	U	1.20	U	6.40	U	6.30	UJ
1,4-Dichlorobenzene	1.50	U	8	U	8.30	U	1.50	U	8.10	U	8	UJ
2-Chloroethyl vinyl ether	1.20	U	6.20	U	6.50	U	1.20	U	6.40	U	6.30	UJ
2-Chlorotoluene	1.10	U	5.70	U	6	U	1.10	U	5.80	U	5.70	UJ
4-Chlorotoluene	1.20	U	6.20	U	6.50	U	1.20	U	6.40	U	6.30	UJ
Bromobenzene	0.82	U	4.30	U	4.50	U	0.82	U	4.40	U	4.30	UJ
Bromochloromethane	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ
Bromodichloromethane	1.10	U	5.70	U	6	U	1.10	U	5.80	U	5.70	UJ
Bromoforn	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ
Bromomethane	3	U	16	U	17	U	3.10	U	16	U	16	UJ
Carbon tetrachloride	0.71	U	3.70	U	3.90	U	0.71	U	3.80	U	3.70	UJ
Chlorobenzene	0.98	U	5.10	U	5.40	U	2	U	5.20	U	5.20	UJ
Chloroethane	2.80	U	15	U	15	U	2.90	U	15	U	15	UJ
Chloroform	0.16	(B)	1.20	(B)	1.40	(B)	1.10	U	0.95	(B)	5.70	UJ
Chloromethane	2.70	U	14	U	15	U	2.70	U	15	U	14	UJ
Cis-1,3-Dichloropropene	1	U	5.40	U	5.70	U	1	U	5.50	U	5.50	UJ
Dibromochloromethane	0.87	U	4.50	U	4.80	U	0.88	U	4.70	U	4.60	UJ
Dibromomethane	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ
Methylene chloride	2.90	(B)	11	(B)	13	(B)	1.50	(B)	10	(B)	18	J
Tetrachloroethane	0.87	U	4.50	U	4.80	U	0.88	U	4.70	U	4.60	UJ
Trans-1,2-Dichloroethene	1.20	U	6.20	U	6.50	U	1.20	U	6.40	U	6.30	UJ
Trans-1,3-Dichloropropene	0.92	U	4.80	U	5.10	U	0.93	U	4.90	U	4.90	UJ
Trichloroethene	0.87	U	4.50	U	4.80	U	0.88	U	4.70	U	4.60	UJ
Vinyl chloride	2.80	U	15	U	15	U	2.90	U	15	U	15	UJ

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR:	V3-B1	V3-B1	V3-B1	V3-B1	V3-B2	V3-B2	V3-B2	V3-B3
SAMPLE ID:	V3-B1-0305	V3-B1-1113	V3-B1-1113D	V3-B1-1113D	V3-B2-0305	V3-B2-1113	V3-B2-0305	V3-B3-0305
COLLECTION DATE:	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94
ASSOCIATED QC:	TB-091394-1,ER-091294-1 FB-090894-P,FB-090894-D	TB-091394-1,ER-091394-1 FB-090894-P,FB-090894-D	TB-091394-1,ER-091394-1 FB-090894-P,FB-090894-D	TB-091394-1,ER-091394-1 FB-090894-P,FB-090894-D	TB-091394-1,ER-091294-1 FB-090894-P,FB-090894-D	TB-091394-1,ER-091294-1 FB-090894-P,FB-090894-D	TB-091394-1,ER-091294-1 FB-090894-P,FB-090894-D	TB-091394-1,ER-091294-1 FB-090894-P,FB-090894-D
<b>CRITERIA UNITS:</b>								
<b>Aromatic Volatile Organic Compounds by 8020</b>								
1,2-Dichlorobenzene	µg/kg	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT
1,3-Dichlorobenzene	µg/kg	0.25	(B)	110		260		3840
1,4-Dichlorobenzene	µg/kg	0.10	(B)	210		150		8900
Benzene	µg/kg	0.19	(B)	200		210		1600
Chlorobenzene	µg/kg	0.10	(B)	8	U	32		500
Ethylbenzene	µg/kg	0.04	(I)	48		44		5200
Methyl-tert-butyl ether	µg/kg	0.19	(B)	46		190		2700
Styrene	µg/kg	12	U	81		33		7200
Toluene	µg/kg	0.13	(B)	34		64		5500
m + p-Xylene	µg/kg							360
m-Xylene	µg/kg	0.34	(B)	69		8.60	(I)	1900
o-Xylene	µg/kg	0.28	(B)	63		210		4600
p-Xylene	µg/kg	0.34	(B)	69		8.60	(I)	1900
<b>Semivolatile Organic Compounds by CLP 3/90</b>								
1,2,4-Trichlorobenzene	µg/kg	360	U	1100		1200		1100
1,2-Dichlorobenzene	µg/kg	360	U	1100		1200		1100
1,3-Dichlorobenzene	µg/kg	360	U	1100		1200		1100
1,4-Dichlorobenzene	µg/kg	360	U	1100		1200		1100
2,2'-Oxybis(1-chloropropane)	µg/kg	360	U	1100		1200		1100
2,4,5-Trichlorophenol	µg/kg	860	U	2700		2800		2700
2,4,6-Trichlorophenol	µg/kg	360	U	1100		1200		1100
2,4-Dichlorophenol	µg/kg	360	U	1100		1200		1100
2,4-Dimethylphenol	µg/kg	360	U	1100		1200		1100
2,4-Dinitrophenol	µg/kg	860	U	2700		2800		2700
2,4-Dinitrotoluene	µg/kg	360	U	1100		1200		1100
2,6-Dinitrotoluene	µg/kg	360	U	1100		1200		1100
2-Chloronaphthalene	µg/kg	360	U	1100		1200		1100
2-Chlorophenol	µg/kg	360	U	1100		1200		1100
2-Methylnaphthalene	µg/kg	76	(I)	11000		5300		1100
2-Methylphenol	µg/kg	360	U	1100		1200		1100
2-Nitroaniline	µg/kg	860	U	2700		2800		2700
2-Nitrophenol	µg/kg	360	U	1100		1200		1100
3,3'-Dichlorobenzidine	µg/kg	360	U	1100		1200		1100
3-Nitroaniline	µg/kg	860	U	2700		2800		2700

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR:	V3-B1		V3-B1		V3-B1		V3-B2		V3-B2		V3-B2		V3-B3	
	SAMPLE ID:	09/13/94	SAMPLE ID:	09/13/94	SAMPLE ID:	09/13/94	SAMPLE ID:	09/13/94	SAMPLE ID:	09/13/94	SAMPLE ID:	09/13/94	SAMPLE ID:	09/13/94
COLLECTION DATE:	V3-B1-0305		V3-B1-1113		V3-B1-1113D		V3-B2-0305		V3-B2-1113		V3-B2-0305		V3-B3-0305	
	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94
ASSOCIATED QC:	TB-091394-1,ER-091294-1		TB-091394-1,ER-091394-1		TB-091394-1,ER-091394-1		TB-091394-1,ER-091294-1		TB-091394-1,ER-091294-1		TB-091394-1,ER-091294-1		TB-091394-1,ER-091294-1	
	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D
CRITERIA	UNITS:		UNITS:		UNITS:		UNITS:		UNITS:		UNITS:		UNITS:	
	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	860	U	2700	2800	U	870	U	2800	U	2700	U	2700	U
4-Bromophenyl phenyl ether	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
4-Chloro-3-methylphenol	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
4-Chloroaniline	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
4-Chlorophenyl phenyl ether	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
4-Methylphenol	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
4-Nitroaniline	µg/kg	860	U	2700	2800	U	870	U	2800	U	2700	U	2700	U
4-Nitrophenol	µg/kg	860	U	2700	2800	U	870	U	2800	U	2700	U	2700	U
Acenaphthene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Acenaphthylene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Anthracene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Benzo(a)anthracene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Benzo(a)pyrene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Benzo(b)fluoranthene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Benzo(g,h,i)perylene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Benzo(k)fluoranthene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Butyl benzyl phthalate	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Carbazole	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Chrysene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Di-n-butyl phthalate	µg/kg	46	0B	1100	1200	U	51	0B	1100	U	1100	U	1100	U
Di-n-octyl phthalate	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Dibenzo(a,h)anthracene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Dibenzofuran	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Diethyl phthalate	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Dimethyl phthalate	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Fluoranthene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Fluorene	µg/kg	360	U	200	1200	U	360	U	1100	U	1100	U	120	U
Hexachlorobenzene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Hexachlorobutadiene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Hexachlorocyclopentadiene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Hexachloroethane	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Indeno(1,2,3-cd)pyrene	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Isophorone	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
N-Nitroso-di-n-propylamine	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
N-Nitrosodiphenylamine(1)	µg/kg	360	U	1100	1200	U	360	U	1100	U	1100	U	1100	U
Naphthalene	µg/kg	56	0	5400	2900	U	360	U	2400	U	1100	U	1100	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: SAMPLE ID: COLLECTION DATE: ASSOCIATED QC:	V3-B1		V3-B1		V3-B1		V3-B2		V3-B2		V3-B2		V3-B3	
	V3-B1-0305	09/13/94	V3-B1-1113	09/13/94	V3-B1-1113D	09/13/94	V3-B2-0305	09/13/94	V3-B2-1113	09/13/94	V3-B2-1113	09/13/94	V3-B3-0305	09/13/94
	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1	TB-091394-1,ER-091294-1
	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D
CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Nitrobenzene µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U	1100	U
Pentachlorophenol µg/kg	860	U	2700	U	2800	U	870	U	2800	U	2800	U	2700	U
Phenanthrene µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U	1100	U
Phenol µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U	1100	U
Pyrene µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U	1100	U
bis(2-Chloroethoxy)methane µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U	1100	U
bis(2-Chloroethyl)ether µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U	1100	U
bis(2-Ethylhexyl)phthalate µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U	1100	U
TAL Metals by CLP 3/90														
Aluminum µg/l	7070	U	5570	UJ	7580	UJ	7530	U	7190	UJ	10200	U	690	U
Antimony µg/l	6.60	U	12.70	UJ	13.40	UJ	6.60	U	13	UJ	3.10	U	3.10	U
Arsenic µg/l	4	U	3.20	UJ	3.60	UJ	4.30	U	3.80	UJ	47.40	U	47.40	U
Barium µg/l	15.80	U	15.90	U	20.40	U	15.30	U	21.20	U	0.25	U	0.25	U
Beryllium µg/l	0.24	U	0.17	U	0.24	U	0.24	U	0.23	U	0.78	U	0.78	U
Cadmium µg/l	0.74	U	1	U	1.10	U	0.75	U	1.10	U	841	U	841	U
Calcium µg/l	735	U	1640	U	1840	U	634	U	1740	U	13.70	U	13.70	U
Chromium µg/l	13.50	U	9.80	U	13	U	14.10	U	12.60	U	6.60	U	6.60	U
Cobalt µg/l	6	U	6	U	9.90	U	5.60	U	9.60	U	5.40	U	5.40	U
Copper µg/l	8.30	U	17.40	U	17.20	U	7.60	U	15.30	U	13300	U	13300	U
Iron µg/l	13300	U	11700	U	15400	U	13900	U	14600	U	8	U	8	U
Lead µg/l	5.20	U	4.50	U	5.10	U	5.40	U	5	U	1900	U	1900	U
Magnesium µg/l	2670	U	2830	U	4000	U	2740	U	3770	U	217	U	217	U
Manganese µg/l	145	U	160	U	206	U	142	U	194	U	0.11	U	0.11	U
Mercury µg/l	0.11	U	0.11	U	0.12	U	0.11	U	0.12	U	13.80	U	13.80	U
Nickel µg/l	17.50	U	17.30	U	20.10	U	18.30	U	19.80	U	585	U	585	U
Potassium µg/l	556	U	453	U	646	U	560	U	615	U	0.89	U	0.89	U
Selenium µg/l	0.85	U	0.89	U	0.93	U	0.86	U	0.91	U	0.92	U	0.92	U
Silver µg/l	0.87	U	0.82	U	0.86	U	0.88	U	0.84	U	119	U	119	U
Sodium µg/l	100	U	144	U	119	U	114	U	164	U	0.82	U	0.82	U
Sulfur µg/l	0.78	U	0.82	U	0.86	U	0.79	U	0.84	U	17	U	17	U
Thallium µg/l	13	U	10.80	U	14.90	U	11.60	U	14.40	U	34.50	U	34.50	U
Vanadium µg/l	26.50	U	33.60	U	38.20	U	30.70	U	36.70	U				
TPH by 8015 Modified California Luft TPH-Extractable as Diesel	1.40	U	900	U	1200	U	3.30	U	2600	U	2500	U		

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

TPH-Purgeable as Gasoline	mg/kg	0.50	U	2100	J	3100	J	0.50	U	2100	J	2800	J
LOCATOR:		V3-B3		V3-B4		V3-B4		V3-B4		V3-B4		V3-B5	
SAMPLE ID:		V3-B3-1315		V3-B4-0305		V3-B4-0810		V3-B4-1315		V3-B4-1315D		V3-B5-0305	
COLLECTION DATE:		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94	
ASSOCIATED QC:		TB-091394-1,ER-091294-1		TB-091394-1,ER-091394-1		TB-091394-1,ER-091394-1		TB-091394-1,ER-091394-1		TB-091394-1,ER-091394-1		TB-091394-1,ER-091294-1	
		TB-0906347, TB-0906348-D		TB-0906347, TB-0906348-D		TB-0906347, TB-0906348-D		TB-0906347, TB-0906348-D		TB-0906347, TB-0906348-D		TB-0906347, TB-0906348-D	
CRITERIA UNITS:													
Organic Compounds by 8010													
	µg/kg	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
1,1,1-Trichloroethane	µg/kg	15	U	0.07	(B)	15	U	2.40	(B)	0.60	(B)	0.16	(B)
1,1,2,2-Tetrachloroethane	µg/kg	3.40	U	0.68	U	3.20	U	3.30	U	3.30	U	0.66	U
1,1,2-Trichloroethane	µg/kg	4.80	U	0.97	U	4.60	U	4.70	U	4.70	U	0.93	U
1,1-Dichloroethane	µg/kg	4.30	U	0.85	U	4	U	4.10	U	4.10	U	0.82	U
1,1-Dichloroethene	µg/kg	4.80	U	0.97	U	4.60	U	4.70	U	4.70	U	0.93	U
1,2,3-Trichloropropane	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
1,2-Dibromoethane (Ethylene di	µg/kg	7.40	U	1.50	U	7	U	7.10	U	7.10	U	1.40	U
1,2-Dichlorobenzene	µg/kg	8	U	1.60	U	7.50	U	2.30	(B)	2.80	(B)	1.50	U
1,2-Dichloroethane	µg/kg	3.70	U	0.74	U	3.50	U	3.60	U	3.60	U	0.71	U
1,2-Dichloropropane	µg/kg	3.70	U	0.74	U	3.50	U	3.60	U	3.60	U	0.71	U
1,3-Dichlorobenzene	µg/kg	6.20	U	2	U	5.90	U	6	U	6	U	1.20	U
1,4-Dichlorobenzene	µg/kg	8	U	2	U	7.50	U	7.70	U	7.70	U	1.50	U
2-Chloroethyl vinyl ether	µg/kg	6.20	U	1.20	U	5.90	U	6	U	6	U	1.20	U
2-Chlorotoluene	µg/kg	5.70	U	1.10	U	5.40	U	5.50	U	5.50	U	1.10	U
4-Chlorotoluene	µg/kg	6.20	U	1.20	U	5.90	U	6	U	6	U	1.20	U
Bromobenzene	µg/kg	4.30	U	0.85	U	4	U	4.10	U	4.10	U	0.82	U
Bromochloromethane	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
Bromodichloromethane	µg/kg	5.70	U	1.10	U	5.40	U	5.50	U	5.50	U	1.10	U
Bromoform	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
Bromomethane	µg/kg	16	U	3.20	U	15	U	15	U	15	U	3.10	U
Carbon tetrachloride	µg/kg	3.70	U	0.74	U	3.50	U	3.60	U	3.60	U	0.71	U
Chlorobenzene	µg/kg	5.10	U	2	U	4.80	U	4.90	U	4.90	U	0.10	(B)
Chloroethane	µg/kg	15	U	3	U	14	U	14	U	14	U	2.90	U
Chloroform	µg/kg	5.70	U	0.31	(B)	5.40	U	0.97	(B)	1.30	(B)	0.37	(B)
Chloromethane	µg/kg	14	U	2.80	U	13	U	14	U	14	U	2.70	U
Cis-1,3-Dichloropropene	µg/kg	5.40	U	1.10	U	5.10	U	5.20	U	5.20	U	1	U
Dibromochloromethane	µg/kg	4.50	U	0.91	U	4.30	U	4.40	U	4.40	U	0.88	U
Dibromomethane	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
Methylene chloride	µg/kg	9.30	(B)	3.30	(B)	4.70	(B)	9.70	(B)	13	(B)	3.10	(B)
Tetrachloroethene	µg/kg	4.50	U	0.91	U	4.30	U	0.76	(B)	0.84	(B)	0.88	U
Trans-1,2-Dichloroethene	µg/kg	6.20	U	1.20	U	5.90	U	6	U	6	U	1.20	U
Trans-1,3-Dichloropropene	µg/kg	4.80	U	0.97	U	4.60	U	4.70	U	4.70	U	0.93	U
Trichloroethene	µg/kg	4.50	U	0.91	U	4.30	U	4.40	U	4.40	U	0.88	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4  
Vermont Air National Guard Base

Vinyl chloride	μg/kg	15	U	3	U	14	U	14	U	14	U	2.90	U
	LOCATOR:	V3-B3		V3-B4		V3-B4		V3-B4		V3-B4		V3-B5	
	SAMPLE ID:	V3-B3-1315		V3-B4-0305		V3-B4-0810		V3-B4-1315		V3-B4-1315D		V3-B5-0305	
	COLLECTION DATE:	09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94	
ASSOCIATED QC: TB-091394-1,ER-091294-1 TB-091394-1,ER-091394-1 TB-091394-1,ER-091394-1 TB-091394-1,ER-091394-1 TB-091394-1,ER-091394-1 TB-091394-1,ER-091294-1 TB-091394-1,ER-091294-1 FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D FB-090894-D													
CRITERIA UNITS:													
Aromatic Volatile Organic Compounds by 8020													
1,2-Dichlorobenzene	μg/kg	2000		9		16000		30000		26000		11	
1,3-Dichlorobenzene	μg/kg	1600		13		12000		2200	()	20000	()	9	
1,4-Dichlorobenzene	μg/kg	1000		11		1300		3300		13000		11	
Benzene	μg/kg	250	U	1.60	U	940		3700	()	160	U	1.50	U
Chlorobenzene	μg/kg	880		5.40		7900		11000		18000		2	U
Ethylbenzene	μg/kg	1100		17		18000		120000		140000		5.40	
Methyl-tert-butyl ether	μg/kg	3600	U	-		13000	U	69000	U	69000	U	12	U
Styrene	μg/kg	1200		4.80		6300		36000		40000		2.80	
Toluene	μg/kg	870		6	U	6800		170000		180000		5.80	U
m + p-Xylene	μg/kg	-		-		-		-		-		-	()B
m-Xylene	μg/kg	4600		3.40	()	39000		260000		210000		0.57	
o-Xylene	μg/kg	4000		16		26000		160000		200000		17	
p-Xylene	μg/kg	1800		3.40	()	18000		93000		110000		0.57	()B
Semivolatile Organic Compounds by CLP 3/90													
1,2,4-Trichlorobenzene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
1,2-Dichlorobenzene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
1,3-Dichlorobenzene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
1,4-Dichlorobenzene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2,2'-Oxybis(1-chloropropane)	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2,4,5-Trichlorophenol	μg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
2,4,6-Trichlorophenol	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2,4-Dichlorophenol	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2,4-Dimethylphenol	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2,4-Dinitrophenol	μg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
2,4-Dinitrotoluene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2,6-Dinitrotoluene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2-Chloronaphthalene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2-Chlorophenol	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2-Methylnaphthalene	μg/kg	910		8100		27000		46000		17000		2900	
2-Methylphenol	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
2-Nitroaniline	μg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
2-Nitrophenol	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
3,3'-Dichlorobenzidine	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

3-Nitroaniline	μg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
LOCATOR:		V3-B3		V3-B4		V3-B4		V3-B4		V3-B4		V3-B5	
SAMPLE ID:		V3-B3-1315		V3-B4-0305		V3-B4-0810		V3-B4-1315		V3-B4-1315D		V3-B5-0305	
COLLECTION DATE:		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94	
ASSOCIATED QC:	TB-091394-1,ER-091294-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091294-1	
	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	FB-090894-1,FB-090894-1	
CRITERIA UNITS:													
4,6-Dinitro-2-methylphenol	μg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
4-Bromophenyl phenyl ether	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Chloro-3-methylphenol	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Chloroaniline	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Chlorophenyl phenyl ether	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Methylphenol	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Nitroaniline	μg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
4-Nitrophenol	μg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
Acenaphthene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Acenaphthylene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Anthracene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(a)anthracene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(a)pyrene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(b)fluoranthene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(g,h,i)perylene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(k)fluoranthene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Butyl benzyl phthalate	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Carbazole	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Chrysene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Di-n-butyl phthalate	μg/kg	67	UB	3700	U	7100	U	7200	U	8000	U	720	U
Di-n-octyl phthalate	μg/kg	370	U	620	U	7100	U	7200	U	8000	U	720	U
Dibenzo(a,h)anthracene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Dibenzofuran	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Diethyl phthalate	μg/kg	370	U	1500	U	7100	U	7200	U	8000	U	720	U
Dimethyl phthalate	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Fluoranthene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Fluorene	μg/kg	370	U	3700	U	7100	U	1100	U	8000	U	720	U
Hexachlorobenzene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Hexachlorobutadiene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Hexachlorocyclopentadiene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Hexachloroethane	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Indeno(1,2,3-cd)pyrene	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Isophorone	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
N-Nitroso-di-n-propylamine	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
N-Nitrosodiphenylamine(1)	μg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U



**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

Naphthalene	μg/kg	340	V3-B3	6100	12000	21000	11000	1400
LOCATOR:			V3-B4	V3-B4	V3-B4	V3-B4	V3-B4	V3-B5
SAMPLE ID:		V3-B3-1315	V3-B4-0305	V3-B4-0810	V3-B4-1315	V3-B4-1315D	V3-B5-0305	
COLLECTION DATE:		09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	
ASSOCIATED QC:		TB-091394-1,ER-091294-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091394-1	TB-091394-1,ER-091294-1	
		FB-090894-F,FB-090894-D	FB-090894-F,FB-090894-D	FB-090894-F,FB-090894-D	FB-090894-F,FB-090894-D	FB-090894-F,FB-090894-D	FB-090894-F,FB-090894-D	
CRITERIA UNITS:								
	μg/kg	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT
Nitrobenzene	μg/kg	370	U	7100	U	8000	U	720
Pentachlorophenol	μg/kg	900	U	17000	U	19000	U	1800
Phenanthrene	μg/kg	370	U	7100	U	8000	U	720
Phenol	μg/kg	370	U	7100	U	8000	U	720
Pyrene	μg/kg	370	U	7100	U	8000	U	720
bis(2-Chloroethoxy)methane	μg/kg	370	U	7100	U	8000	U	720
bis(2-Chloroethyl)ether	μg/kg	370	U	7100	U	8000	U	720
bis(2-Ethylhexyl)phthalate	μg/kg	370	U	7100	U	8000	U	720
TAL Metals by CLP 3/90								
Aluminum	μg/l	5200	U	9440	U	4310	U	7420
Antimony	μg/l	6.80	U	6.50	U	12.30	U	12.30
Arsenic	μg/l	2.70	U	3.80	U	3.40	U	2.30
Barium	μg/l	14.70	U	27.90	U	10.60	U	29.10
Beryllium	μg/l	0.25	U	0.24	U	0.18	U	0.25
Cadmium	μg/l	0.77	U	0.73	U	1.10	U	1.10
Calcium	μg/l	1820	U	2180	U	1540	U	248
Chromium	μg/l	9.10	U	17	U	9.60	U	11.20
Cobalt	μg/l	6.10	U	8.80	U	7.60	U	7.40
Copper	μg/l	13.20	U	17.60	U	12.50	U	8.40
Iron	μg/l	11900	U	18600	U	10300	U	11900
Lead	μg/l	3.70	U	5.20	U	3.20	U	5.40
Magnesium	μg/l	2760	U	4790	U	2390	U	1980
Manganese	μg/l	147	U	417	U	153	U	437
Mercury	μg/l	0.11	U	0.11	U	0.11	U	0.11
Nickel	μg/l	21.30	U	26.40	U	15.80	U	12.10
Potassium	μg/l	578	U	549	U	355	U	300
Selenium	μg/l	0.88	U	0.84	U	0.86	U	0.86
Silver	μg/l	0.90	U	0.86	U	0.79	U	0.79
Sodium	μg/l	127	U	125	U	103	U	130
Thallium	μg/l	0.81	U	0.77	U	0.79	U	0.79
Vanadium	μg/l	10.20	U	15.60	U	10.10	U	14.10
Zinc	μg/l	27	U	43.20	U	25.20	U	30.10
TPH by 8015 Modified California Luft								
TPH-Extractable as Diesel	mg/kg	590	28	5200	19000	26000	130	

TABLE J-1 LABORATORY ANALYTICAL DATA  
 Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4  
 Vermont Air National Guard Base

TPH-Purgeable as Gasoline	mg/kg	1200	J	11	4300	J	15000	J	7400	J	44
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**TABLE J-1 LABORATORY ANALYTICAL DATA**  
Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4  
Vermont Air National Guard Base

LOCATOR:	V3-B5	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V4-B1
SAMPLE ID:	V3-B5-1315	V3-BG1-0305	V3-BG1-1820	V3-BG1-3840	V3-BG1-3840D	V4-B1-0911		
COLLECTION DATE:	09/13/94	09/20/94	09/20/94	09/20/94	09/20/94	09/08/94		
ASSOCIATED QC:	TB-091394-1,ER-091294-1,FB-090894-P,FB-090894-D	TB-092094-1,ER-092094-1,FB-092194-1,FB-090894-D	TB-092094-1,ER-092094-1,FB-092194-1,FB-090894-D	TB-092094-1,ER-092094-1,FB-092194-1,FB-090894-D	TB-092094-1,ER-092094-1,FB-092194-1,FB-090894-D	TB-090894-1,ER-090894-1,FB-090894-P,FB-090894-D		
CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010								
1,1,1,2-Tetrachloroethane	µg/kg	5.70	U	U	0.98	U	1.10	U
1,1,1-Trichloroethane	µg/kg	0.56	0	(B)	0.12	(B)	3.30	U
1,1,2,2-Tetrachloroethane	µg/kg	3.80	U	U	0.65	U	0.74	U
1,1,2-Trichloroethane	µg/kg	5.40	U	U	0.92	U	1	U
1,1-Dichloroethane	µg/kg	4.70	U	U	0.85	U	0.99	U
1,1-Dichloroethene	µg/kg	5.40	U	U	0.92	U	1	U
1,2,3-Trichloropropane	µg/kg	5.70	U	U	0.98	U	1.10	U
1,2-Dibromoethane (Ethylene di	µg/kg	8.20	U	U	1.40	U	1.70	U
1,2-Dichlorobenzene	µg/kg	8.90	U	U	1.50	U	1.80	U
1,2-Dichloroethane	µg/kg	4.10	U	U	0.71	U	0.86	U
1,2-Dichloropropane	µg/kg	4.10	U	U	0.71	U	0.86	U
1,3-Dichlorobenzene	µg/kg	7	U	U	1.20	U	2.40	U
1,4-Dichlorobenzene	µg/kg	8.90	U	U	1.50	U	2.40	U
2-Chloroethyl vinyl ether	µg/kg	7	U	U	1.20	U	1.40	U
2-Chlorotoluene	µg/kg	6.30	U	U	1.10	U	1.30	U
4-Chlorotoluene	µg/kg	7	U	U	1.20	U	1.40	U
Bromobenzene	µg/kg	4.70	U	U	0.82	U	0.93	U
Bromochloromethane	µg/kg	5.70	U	U	0.98	U	1.10	U
Bromodichloromethane	µg/kg	6.30	U	U	1.10	U	1.20	U
Bromoform	µg/kg	5.70	U	U	0.98	U	1.20	U
Bromomethane	µg/kg	18	U	U	3	U	3.70	U
Carbon tetrachloride	µg/kg	4.10	U	U	0.71	U	0.86	U
Chlorobenzene	µg/kg	5.70	U	U	0.98	U	2.40	U
Chloroethane	µg/kg	16	U	U	2.80	U	3.40	U
Chloroform	µg/kg	1	0	(B)	0.13	(B)	1.30	U
Chloromethane	µg/kg	16	U	U	12	U	3.30	U
Cis-1,3-Dichloropropene	µg/kg	6	U	U	1	U	1.20	U
Dibromochloromethane	µg/kg	5.10	U	U	0.87	U	1.10	U
Dibromomethane	µg/kg	5.70	U	U	0.98	U	1.20	U
Methylene chloride	µg/kg	14	(B)	0	2.20	(B)	2.30	(B)
Tetrachloroethene	µg/kg	5.10	U	U	0.87	U	1.10	U
Trans-1,2-Dichloroethene	µg/kg	7	U	U	1.20	U	1.40	U
Trans-1,3-Dichloropropene	µg/kg	5.40	U	U	0.92	U	1.10	U
Trichloroethene	µg/kg	5.10	U	U	0.87	U	1.10	U
Vinyl chloride	µg/kg	16	U	U	2.80	U	3.40	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

<b>LOCATOR:</b>		V3-B5	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V4-B1
<b>SAMPLE ID:</b>		V3-B5-1315	V3-BG1-0305	V3-BG1-1820	V3-BG1-3840	V3-BG1-3840D	V3-BG1-3840	V3-BG1-3840D	V3-BG1-3840D	V4-B1-0911
<b>COLLECTION DATE:</b>		09/13/94	09/20/94	09/20/94	09/20/94	09/20/94	09/20/94	09/20/94	09/20/94	09/08/94
<b>ASSOCIATED QC:</b>		TB-091394-1, ER-091294-1, FB-090894-D	TB-092094-1, ER-092094-1, FB-090894-D	TB-092094-1, ER-092094-1, FB-090894-D	TB-092094-1, ER-092094-1, FB-090894-D	TB-092094-1, ER-092094-1, FB-090894-D	TB-092094-1, ER-092094-1, FB-090894-D	TB-092094-1, ER-092094-1, FB-090894-D	TB-092094-1, ER-092094-1, FB-090894-D	TB-090894-1, ER-090894-1, FB-090894-P, FB-090894-D
<b>CRITERIA UNITS:</b>										
<b>Organic Compounds by 8020</b>										
Aromatic Volatile	µg/kg	5300	1.60	U	-	1.70	U	1.80	U	1.20 (B)
1,2-Dichlorobenzene	µg/kg	6100	1.20	U	-	1.40	U	1.40	U	1.30 U
1,3-Dichlorobenzene	µg/kg	490	1.60	U	-	1.70	U	1.80	U	0.34 (B)
1,4-Dichlorobenzene	µg/kg	1100	1.60	U	1.50	1.70	U	1.80	U	1.70 U
Benzene	µg/kg	2700	1	U	-	1.10	U	1.20	U	0.14 U
Chlorobenzene	µg/kg	9900	2	U	2	2.20	U	2.40	U	0.07 (B)
Ethylbenzene	µg/kg	3500	13	U	-	14	U	14	U	0.31 U
Methyl-tert-butyl ether	µg/kg	5500	1.70	U	1.60	1.90	U	2	U	1.80 U
Styrene	µg/kg	10000	0.39	(B)	0.35 (B)	0.44 (B)	(B)	0.43 (B)	(B)	1.70 (B)
Toluene	µg/kg	-	-	U	3.50	-	U	-	-	-
m + p-Xylene	µg/kg	22000	0.20	(B)	-	0.29	(B)	0.39	(B)	0.16 (B)
m-Xylene	µg/kg	16000	1.40	U	1.30	1.50	U	0.34	(B)	1.40 U
o-Xylene	µg/kg	9600	0.20	(B)	-	0.29	(B)	0.39	(B)	0.16 (B)
p-Xylene	µg/kg	-	-	-	-	-	-	-	-	-
<b>Semivolatile Organic Compounds by CLP 3/90</b>										
1,2,4-Trichlorobenzene	µg/kg	420	380	U	360	410	U	430	U	400 U
1,2-Dichlorobenzene	µg/kg	5800	380.70	U	360.60	410.90	U	430	U	400.80 U
1,3-Dichlorobenzene	µg/kg	420	380	U	360	410	U	430	U	400 U
1,4-Dichlorobenzene	µg/kg	420	380	U	360	410	U	430	U	400 U
2,2'-Oxybis(1-chloropropane)	µg/kg	1000	910	U	870	990	U	1100	U	960 U
2,4,5-Trichlorophenol	µg/kg	420	380	U	360	410	U	430	U	400 U
2,4,6-Trichlorophenol	µg/kg	420	380	U	360	410	U	430	U	400 U
2,4-Dichlorophenol	µg/kg	420	380	U	360	410	U	430	U	400 U
2,4-Dimethylphenol	µg/kg	420	380	U	360	410	U	430	U	400 U
2,4-Dinitrophenol	µg/kg	1000	910	U	870	990	U	1100	U	960 U
2,6-Dinitrotoluene	µg/kg	420	380	U	360	410	U	430	U	400 U
2-Chloronaphthalene	µg/kg	420	380	U	360	410	U	430	U	400 U
2-Chlorophenol	µg/kg	420	380	U	360	410	U	430	U	400 U
2-Methylnaphthalene	µg/kg	110	380	U	360	410	U	430	U	400 U
2-Methylphenol	µg/kg	420	380	U	360	410	U	430	U	400 U
2-Nitroaniline	µg/kg	1000	910	U	870	990	U	1100	U	960 U
2-Nitrophenol	µg/kg	420	380	U	360	410	U	430	U	400 U
3,3'-Dichlorobenzidine	µg/kg	420	380	U	360	410	U	430	U	400 U
3-Nitroaniline	µg/kg	1000	910	U	870	990	U	1100	U	960 U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: SAMPLE ID: COLLECTION DATE: ASSOCIATED QC:	V3-B5		V3-BG1		V3-BG1-1820		V3-BG1		V3-BG1-3840		V3-BG1		V3-BG1-3840D		V4-B1	
	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
CRITERIA UNITS:																
4,6-Dinitro-2-methylphenol	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U	960	U	U
4-Bromophenyl phenyl ether	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
4-Chloro-3-methylphenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
4-Chloroaniline	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
4-Chlorophenyl phenyl ether	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
4-Methylphenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
4-Nitroaniline	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U	960	U	U
4-Nitrophenol	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U	960	U	U
Acenaphthene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Acenaphthylene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Anthracene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Benzo(a)anthracene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Benzo(a)pyrene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Benzo(b)fluoranthene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Benzo(g,h,i)perylene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Benzo(k)fluoranthene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Butyl benzyl phthalate	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Carbazole	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Chrysene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Di-n-butyl phthalate	µg/kg	72	(B)	90	(B)	100	(B)	100	(B)	120	(B)	400	(B)	400	U	U
Di-n-octyl phthalate	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Dibenz(a,h)anthracene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Dibenzofuran	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Diethyl phthalate	µg/kg	420	U	130	U	360	U	410	U	430	U	400	U	400	U	U
Dimethyl phthalate	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Fluoranthene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Fluorene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Hexachlorobenzene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Hexachlorobutadiene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Hexachlorocyclopentadiene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Hexachloroethane	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Indeno(1,2,3-cd)pyrene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Isophorone	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
N-Nitroso-di-n-propylamine	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
N-Nitrosodiphenylamine(1)	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U	400	U	U
Naphthalene	µg/kg	86	(I)	380	U	360	U	410	U	430	U	400	U	400	U	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

<b>LOCATOR:</b>		V3-B5	V3-BG1	V3-BG1	V3-BG1-1820	V3-BG1	V3-BG1-3840	V3-BG1	V4-B1
<b>SAMPLE ID:</b>		V3-B5-1315	V3-BG1-0305	V3-BG1-1820	V3-BG1-3840	V3-BG1-3840D	V3-BG1-3840D	V3-BG1-3840D	V4-B1-0911
<b>COLLECTION DATE:</b>		09/13/94	09/20/94	09/20/94	09/20/94	09/20/94	09/20/94	09/20/94	09/08/94
<b>ASSOCIATED QC:</b>		TB-091394-1, ER-091294-1 FB-090894-P, FB-090894-D	TB-092094-1, ER-092094-1 FB-092194-1, FB-090894-D	TB-092094-1, ER-092094-1 FB-092194-1, FB-090894-D	TB-092094-1, ER-092094-1 FB-092194-1, FB-090894-D	TB-092094-1, ER-092094-1 FB-092194-1, FB-090894-D	TB-092094-1, ER-092094-1 FB-092194-1, FB-090894-D	TB-092094-1, ER-092094-1 FB-092194-1, FB-090894-D	TB-090894-1, ER-090894-1 FB-090894-P, FB-090894-D
<b>CRITERIA UNITS:</b>									
Nitrobenzene	µg/kg	420	U	380	U	360	U	410	U
Pentachlorophenol	µg/kg	1000	U	910	U	870	U	990	U
Phenanthrene	µg/kg	420	U	380	U	360	U	410	U
Phenol	µg/kg	420	U	380	U	360	U	410	U
Pyrene	µg/kg	420	U	380	U	360	U	410	U
bis(2-Chloroethoxy)methane	µg/kg	420	U	380	U	360	U	410	U
bis(2-Chloroethyl)ether	µg/kg	420	U	380	U	360	U	410	U
bis(2-Ethylhexyl)phthalate	µg/kg	420	U	380	U	360	U	410	U
<b>TAL Metals by CLP 3/90</b>									
Aluminum	µg/l	10200	U	5950	U	2270	U	6660	U
Antimony	µg/l	7.60	U	6.90	U	11.50	U	7.50	U
Arsenic	µg/l	4.90	U	5.60	U	3.60	U	2.70	U
Barium	µg/l	30.40	U	14.20	U	5.20	U	15.30	U
Beryllium	µg/l	0.28	U	0.25	U	0.10	U	0.27	U
Cadmium	µg/l	0.86	U	0.77	U	0.95	U	0.84	U
Calcium	µg/l	2250	U	1410	U	1470	U	2610	U
Chromium	µg/l	18.96	U	18.20	U	5.90	U	14.40	U
Cobalt	µg/l	9.90	U	7.50	U	3.50	U	8.40	U
Copper	µg/l	18.30	U	11.20	U	9.90	U	16.30	U
Iron	µg/l	19800	U	13600	U	7010	U	15500	U
Lead	µg/l	5160	U	3540	U	1720	U	4000	U
Magnesium	µg/l	336	U	328	U	201	U	367	U
Manganese	µg/l	0.13	U	0.11	U	0.10	U	0.12	U
Mercury	µg/l	30.70	U	23.40	U	12.40	U	21.50	U
Nickel	µg/l	643	U	581	U	237	U	633	U
Potassium	µg/l	0.98	U	0.89	U	0.81	U	0.97	U
Selenium	µg/l	1	U	0.91	U	0.74	U	0.99	U
Silver	µg/l	160	U	119	U	153	U	294	U
Sodium	µg/l	0.91	U	0.82	U	0.74	U	0.89	U
Thallium	µg/l	17.30	U	11.20	U	5.90	U	13.40	U
Vanadium	µg/l	47.90	U	26.70	U	16.10	U	35.50	U
Zinc	µg/l	1300	U	1.20	U	11	U	1.40	U
<b>TPH by 8015 Modified California Luft</b>									
TPH-Extractable as Diesel	mg/kg	2700	U	0.04	U	0.05	U	0.03	U
TPH-Purgeable as Gasoline	mg/kg		U		U		U		U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR:	V4-B1	V4-B2	V4-B3	V4-B4
SAMPLE ID:	V4-B1-1719	V4-B2-1416	V4-B3-1416	V4-B4-0911
COLLECTION DATE:	09/08/94	09/07/94	09/07/94	09/08/94
ASSOCIATED QC:	TB-090894-1, ER-090894-1, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	TB-090894-1, ER-090894-1, FB-090894-P, FB-090894-D

CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010								
1,1,1,2-Tetrachloroethane	µg/kg	5.20	U	U	0.95	U	1.10	U
1,1,1-Trichloroethane	µg/kg	16	U	U	2.80	U	3.40	U
1,1,2,2-Tetrachloroethane	µg/kg	3.40	U	U	0.63	U	0.76	U
1,1,2-Trichloroethane	µg/kg	4.90	U	U	0.89	U	1.10	U
1,1-Dichloroethane	µg/kg	4.30	U	U	0.79	U	0.95	U
1,1-Dichloroethane	µg/kg	4.90	U	U	0.89	U	1.10	U
1,2,3-Trichloropropane	µg/kg	5.20	U	U	0.95	U	1.10	U
1,2-Dibromoethane (Ethylene di	µg/kg	7.50	U	U	1.40	U	1.60	U
1,2-Dichlorobenzene	µg/kg	8	U	U	1.50	U	1.80	U
1,2-Dichloroethane	µg/kg	3.70	U	U	0.68	U	0.82	U
1,2-Dichloropropane	µg/kg	3.70	U	U	0.68	U	0.82	U
1,3-Dichlorobenzene	µg/kg	6.30	U	U	1.20	U	1.40	U
1,4-Dichlorobenzene	µg/kg	8	U	U	1.50	U	1.80	U
2-Chloroethyl vinyl ether	µg/kg	6.30	U	U	1.20	U	1.40	U
2-Chlorotoluene	µg/kg	5.70	U	U	1.10	U	1.30	U
4-Chlorotoluene	µg/kg	6.30	U	U	1.40	U	1.40	U
Bromobenzene	µg/kg	4.30	U	U	0.79	U	0.95	U
Bromodichloromethane	µg/kg	1.70	U	U	0.95	U	1.10	U
Bromoform	µg/kg	5.20	U	U	1.10	U	1.30	U
Bromomethane	µg/kg	16	U	U	0.94	U	1.10	U
Carbon tetrachloride	µg/kg	3.70	U	U	2.90	U	3.50	U
Chlorobenzene	µg/kg	5.20	U	U	0.68	U	0.82	U
Chloroethane	µg/kg	15	U	U	0.95	U	2.30	U
Chloroform	µg/kg	5.70	U	U	2.70	U	3.30	U
Chloromethane	µg/kg	14	U	U	0.31	U	0.52	U
Cis-1,3-Dichloropropene	µg/kg	5.50	U	U	2.60	U	3.20	U
Dibromochloromethane	µg/kg	4.60	U	U	1	U	1.20	U
Dibromomethane	µg/kg	5.20	U	U	0.84	U	1	U
Methylene chloride	µg/kg	9.40	U	U	0.95	U	1.10	U
Tetrachloroethane	µg/kg	4.60	U	U	1.20	U	1.40	U
Trans-1,2-Dichloroethene	µg/kg	6.30	U	U	0.84	U	1.10	U
Trans-1,3-Dichloropropene	µg/kg	4.90	U	U	1.20	U	1.40	U
Trichloroethene	µg/kg	4.60	U	U	0.89	U	1.10	U
Vinyl chloride	µg/kg	15	U	U	0.84	U	1	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

<b>LOCATOR:</b>		V4-B1	V4-B2	V4-B2	V4-B2	V4-B3	V4-B3	V4-B3	V4-B4
<b>SAMPLE ID:</b>		V4-B1-1719	V4-B2-1416	V4-B2-1921	V4-B2-1921	V4-B3-1416	V4-B3-1921	V4-B3-1921	V4-B4-0911
<b>COLLECTION DATE:</b>		09/08/94	09/07/94	09/07/94	09/07/94	09/07/94	09/07/94	09/07/94	09/08/94
<b>ASSOCIATED QC:</b>		TB-090894-1, ER-090894-1, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-D	TB-090894-1, ER-090894-1, FB-090894-D
<b>CRITERIA UNITS:</b>									
<b>Aromatic Volatile Organic Compounds by 8020</b>									
1,2-Dichlorobenzene	µg/kg	21000	0.35	(B)	1.80	U	0.30	(B)	0.61 (B)
1,3-Dichlorobenzene	µg/kg	2400	0.28	(I)	1	(I)	0.19	(B)	0.07 (B)
1,4-Dichlorobenzene	µg/kg	3100	0.50	(I)	1.80	U	0.25	(B)	0.19 (B)
Benzene	µg/kg	5000	0.51	(I)	3.40	U	0.05	(I)	0.05 (I)
Chlorobenzene	µg/kg	15000	0.94	U	1.10	U	1.90	U	1.10 U
Ethylbenzene	µg/kg	50000	0.74	(I)	7.40	U	0.45	(B)	0.38 (B)
Methyl-tert-butyl ether	µg/kg	72000	11	U	14	U	12	U	14 U
Styrene	µg/kg	32000	0.04	(B)	1.90	U	0.05	(B)	1.90 U
Toluene	µg/kg	3600	4	(I)	9.70	U	1.20	(B)	5.40 (I)
m + p-Xylene	µg/kg	-	-	-	-	-	-	-	-
m-Xylene	µg/kg	60000	1.40	(I)	9.80	U	0.66	(B)	0.55 (B)
o-Xylene	µg/kg	14000	1.20	(I)	9.10	U	0.69	(I)	0.15 (B)
p-Xylene	µg/kg	46000	1.40	(I)	9.80	U	0.66	(B)	0.55 (B)
<b>Semivolatile Organic Compounds by CLP 3/90</b>									
1,2,4-Trichlorobenzene	µg/kg	7600	340	U	420	U	350	U	410 U
1,2-Dichlorobenzene	µg/kg	7600	340	U	420	U	350	U	410 U
1,3-Dichlorobenzene	µg/kg	7600	340	U	420	U	350	U	410 U
1,4-Dichlorobenzene	µg/kg	7600	340	U	420	U	350	U	410 U
2,2'-Oxybis(1-chloropropane)	µg/kg	7600	340	U	420	U	350	U	410 U
2,4,5-Trichlorophenol	µg/kg	18000	830	U	1000	U	840	U	1000 U
2,4,6-Trichlorophenol	µg/kg	7600	340	U	420	U	350	U	410 U
2,4-Dichlorophenol	µg/kg	7600	340	U	420	U	350	U	410 U
2,4-Dimethylphenol	µg/kg	7600	340	U	420	U	350	U	410 U
2,4-Dinitrophenol	µg/kg	18000	830	U	1000	U	840	U	1000 U
2,4-Dinitrotoluene	µg/kg	7600	340	U	420	U	350	U	410 U
2,6-Dinitrotoluene	µg/kg	7600	340	U	420	U	350	U	410 U
2-Chloronaphthalene	µg/kg	7600	340	U	420	U	350	U	410 U
2-Chlorophenol	µg/kg	7600	340	U	420	U	350	U	410 U
2-Methylnaphthalene	µg/kg	22000	340	U	420	U	350	U	410 U
2-Methylphenol	µg/kg	7600	340	U	420	U	350	U	410 U
2-Nitroaniline	µg/kg	18000	830	U	1000	U	840	U	1000 U
2-Nitrophenol	µg/kg	7600	340	U	420	U	350	U	410 U
3,3'-Dichlorobenzidine	µg/kg	7600	340	U	420	U	350	U	410 U
3-Nitroaniline	µg/kg	18000	830	U	1000	U	840	U	1000 U



**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: SAMPLE ID: COLLECTION DATE: ASSOCIATED QC:	V4-B1		V4-B2		V4-B2-1416		V4-B2-1921		V4-B3		V4-B3-1416		V4-B3-1921		V4-B4	
	09/08/94	TB-090894-1, ER-090894-1, FB-090894-D	09/07/94	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	09/07/94	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	09/07/94	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	09/07/94	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	09/07/94	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	09/07/94	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	09/08/94	TB-090894-1, ER-090894-1, FB-090894-P, FB-090894-D
CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U	1000	U	U
4-Bromophenyl phenyl ether	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
4-Chloro-3-methylphenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
4-Chloroaniline	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
4-Chlorophenyl phenyl ether	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
4-Methylphenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
4-Nitroaniline	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U	1000	U	U
4-Nitrophenol	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U	1000	U	U
Acenaphthene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Acenaphthylene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Anthracene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Benzo(a)anthracene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Benzo(a)pyrene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Benzo(b)fluoranthene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Benzo(g,h,i)perylene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Benzo(k)fluoranthene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Butyl benzyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Carbazole	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Chrysene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Di-n-butyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Di-n-octyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Dibenz(a,h)anthracene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Dibenzofuran	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Diethyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Dimethyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Fluoranthene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Fluorene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Hexachlorobenzene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Hexachlorobutadiene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Hexachlorocyclopentadiene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Hexachloroethane	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Indeno(1,2,3-cd)pyrene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Isophorone	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
N-Nitroso-di-n-propylamine	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
N-Nitrosodiphenylamine(1)	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U	410	U	U
Naphthalene	µg/kg	13000	U	340	U	53	U	350	U	420	U	410	U	410	U	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR:		V4-B1	V4-B2	V4-B2	V4-B2	V4-B3	V4-B3	V4-B3	V4-B4
SAMPLE ID:		V4-B1-1719	V4-B2-1416	V4-B2-1921	V4-B2-1921	V4-B3-1416	V4-B3-1921	V4-B4-0911	
COLLECTION DATE:		09/08/94	09/07/94	09/07/94	09/07/94	09/07/94	09/07/94	09/08/94	
ASSOCIATED QC:		TB-090894-1,ER-090894-D	TB-090894-1,ER-090894-D	TB-090894-1,ER-090894-D	TB-090894-1,ER-090894-D	TB-090894-1,ER-090894-D	TB-090894-1,ER-090894-D	TB-090894-1,ER-090894-D	
		FB-090894-P,FB-090894-D	FB-090894-P,FB-090894-D	FB-090894-P,FB-090894-D	FB-090894-P,FB-090894-D	FB-090894-P,FB-090894-D	FB-090894-P,FB-090894-D	FB-090894-P,FB-090894-D	
CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Nitrobenzene	µg/kg	7600	U	340	U	350	U	410	U
Phenanthrophenol	µg/kg	18000	U	830	U	840	U	1000	U
Phenanthrene	µg/kg	7600	U	340	U	350	U	410	U
Phenol	µg/kg	7600	U	340	U	350	U	410	U
Pyrene	µg/kg	7600	U	340	U	350	U	410	U
bis(2-Chloroethoxy)methane	µg/kg	7600	U	340	U	350	U	410	U
bis(2-Chloroethyl)ether	µg/kg	7600	U	340	U	350	U	410	U
bis(2-Ethylhexyl)phthalate	µg/kg	7600	U	340	U	350	U	410	U
TAL Metals by CLP 3/90									
Aluminum	µg/l	2400	U	3710	U	3780	U	4190	U
Antimony	µg/l	12.90	U	11.70	U	11.80	U	14.20	U
Arsenic	µg/l	6.10	U	12.20	U	12.20	U	2.50	U
Barium	µg/l	9.30	U	10.60	U	24.50	U	8.60	U
Beryllium	µg/l	0.12	U	0.10	U	0.19	U	0.13	U
Cadmium	µg/l	1.10	U	0.96	U	0.97	U	1.27	U
Calcium	µg/l	572	U	882	U	3670	U	1940	U
Chromium	µg/l	5.90	U	8.50	U	8.30	U	8.30	U
Cobalt	µg/l	4.50	U	5.50	U	5.80	U	7.20	U
Copper	µg/l	6	U	7.50	U	11.70	U	13.10	U
Iron	µg/l	6740	U	11500	U	10800	U	11200	U
Lead	µg/l	1440	U	2140	U	2090	U	2340	U
Magnesium	µg/l	441	U	101	U	641	U	143	U
Manganese	µg/l	0.12	U	0.10	U	0.11	U	0.13	U
Mercury	µg/l	10.70	U	15.40	U	14.80	U	16.40	U
Nickel	µg/l	296	U	285	U	519	U	398	U
Potassium	µg/l	0.90	U	0.81	U	0.82	U	0.99	U
Selenium	µg/l	0.83	U	0.75	U	0.76	U	0.91	U
Silver	µg/l	124	U	170	U	115	U	159	U
Sodium	µg/l	0.83	U	0.75	U	0.76	U	0.91	U
Thallium	µg/l	5.40	U	8.90	U	8	U	10.10	U
Vanadium	µg/l	19	U	21	U	26.70	U	25.90	U
Zinc	µg/l	4800	U	10	U	10	U	13	U
TPH by 8015 Modified California Luft	mg/kg	9200	U	13	U	0.50	U	0.50	U
TPH-Extractable as Diesel	mg/kg		J	2.10	U		U		U
TPH-Purgeable as Gasoline	mg/kg								

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: SAMPLE ID: COLLECTION DATE: ASSOCIATED QC:	V4-B4		V4-B5		V4-B5		V4-B5		V4-B6		V4-B6	
	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
	4.80	U	0.99	U	1.10	U	5.40	U	1.10	U	1.10	U
<b>CRITERIA UNITS:</b>												
<b>Halogenated Volatile Organic Compounds by 8010</b>												
1,1,1,2-Tetrachloroethane	µg/kg	14	3	U	3.40	U	16	U	3.20	U	3.40	U
1,1,1-Trichloroethane	µg/kg	3.20	0.66	U	0.75	U	3.60	U	0.71	U	0.75	U
1,1,2,2-Tetrachloroethane	µg/kg	4.50	0.93	U	1.10	U	5.10	U	1	U	1.10	U
1,1,2-Trichloroethane	µg/kg	4	0.82	U	0.94	U	4.50	U	0.89	U	0.94	U
1,1-Dichloroethane	µg/kg	4.50	0.93	U	1.10	U	5.10	U	1	U	1.10	U
1,1-Dichloroethene	µg/kg	4.80	0.99	U	1.10	U	5.40	U	1.10	U	1.10	U
1,2,3-Trichloropropane	µg/kg	6.90	1.40	U	1.60	U	7.70	U	1.50	U	1.60	U
1,2-Dibromoethane (Ethylene di	µg/kg	7.40	1.50	U	1.80	U	8.30	U	1.70	U	1.80	U
1,2-Dichlorobenzene	µg/kg	3.50	0.71	U	0.81	U	3.90	U	0.77	U	0.81	U
1,2-Dichloroethane	µg/kg	3.50	0.71	U	0.81	U	3.90	U	0.77	U	0.81	U
1,2-Dichloropropane	µg/kg	5.90	2	U	2.20	U	6.50	U	1.30	U	1.40	U
1,3-Dichlorobenzene	µg/kg	7.40	2	U	2.20	U	8.30	U	1.70	U	1.80	U
1,4-Dichlorobenzene	µg/kg	5.90	1.20	U	1.40	U	6.50	U	1.30	U	1.40	U
2-Chloroethyl vinyl ether	µg/kg	5.30	1.10	U	1.20	U	6	U	1.20	U	1.20	U
2-Chlorotoluene	µg/kg	5.90	1.20	U	1.40	U	6.50	U	1.30	U	1.40	U
4-Chlorotoluene	µg/kg	4	0.82	U	0.94	U	4.50	U	0.89	U	0.94	U
Bromobenzene	µg/kg	4.80	0.99	U	1.10	U	5.40	U	0.44	U	1.10	U
Bromochloromethane	µg/kg	5.30	1.10	U	1.20	U	6	U	1.20	U	1.20	U
Bromodichloromethane	µg/kg	4.80	0.99	U	1.10	U	5.40	U	1.10	U	1.10	U
Bromoforn	µg/kg	15	3.10	U	3.50	U	17	U	3.30	U	3.50	U
Bromomethane	µg/kg	3.50	0.71	U	0.81	U	3.90	U	0.77	U	0.81	U
Carbon tetrachloride	µg/kg	4.80	2	U	2.20	U	5.40	U	2.10	U	2.20	U
Chlorobenzene	µg/kg	14	2.90	U	3.20	U	15	U	3.10	U	3.20	U
Chloroethane	µg/kg	5.30	1.10	U	1.20	U	3.90	U	1.20	U	0.43	U
Chloroforn	µg/kg	13	2.70	U	3.10	U	15	U	3	U	3.10	U
Chloromethane	µg/kg	5.10	1	U	1.20	U	5.70	U	1.10	U	1.20	U
Cis-1,3-Dichloropropene	µg/kg	4.30	0.88	U	1	U	4.80	U	0.95	U	1	U
Dibromochloromethane	µg/kg	4.80	0.99	U	1.10	U	5.40	U	1.10	U	1.10	U
Dibromomethane	µg/kg	15	1.50	U	6.90	U	30	U	1.30	U	1.90	U
Methylene chloride	µg/kg	4.30	0.88	U	1	U	4.80	U	0.95	U	1	U
Tetrachloroethane	µg/kg	5.90	1.20	U	1.40	U	6.50	U	1.30	U	0.41	U
Trans-1,2-Dichloroethene	µg/kg	4.50	0.93	U	1.10	U	5.10	U	1	U	1.10	U
Trans-1,3-Dichloropropene	µg/kg	4.30	0.88	U	1	U	4.80	U	0.95	U	1	U
Trichloroethane	µg/kg	14	2.90	U	3.20	U	15	U	3.10	U	3.20	U
Vinyl chloride	µg/kg											

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR:		V4-B4	V4-B5	V4-B5	V4-B5	V4-B5	V4-B6	V4-B6
SAMPLE ID:		V4-B4-1719	V4-B5-0406	V4-B5-0911	V4-B5-1719	V4-B6-1921	V4-B6-2426	
COLLECTION DATE:		09/08/94	09/14/94	09/14/94	09/14/94	09/07/94	09/07/94	
ASSOCIATED QC:		TB-090894-1, ER-090894-1, FB-090894-D	TB-091494-1, ER-091394-1, FB-090894-P, FB-090894-D	TB-091494-1, ER-091394-1, FB-090894-P, FB-090894-D	TB-091494-1, ER-091394-1, FB-090894-P, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	TB-090794-1, ER-090894-1, FB-090894-P, FB-090894-D	
CRITERIA UNITS:								
Organic Compounds by 8020								
	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Aromatic Volatile	µg/kg		1.50	U	1.80	U	22000	0.10 (IB)
1,2-Dichlorobenzene	µg/kg	72	1.20	U	1.40	U	12000	0.10 (IB)
1,3-Dichlorobenzene	µg/kg	39	1.50	U	1.80	U	31000	0.22 (IB)
1,4-Dichlorobenzene	µg/kg	92	1.50	U	1.80	U	2600	1.80 (U)
Benzene	µg/kg	7.40	0.99	U	1.10	U	8000	1.10 (U)
Chlorobenzene	µg/kg	59	2	U	0.49 (IB)	U	26000	2.20 (U)
Ethylbenzene	µg/kg	53	12	U	1.40	U	37000	1.90 (U)
Methyl-tert-butyl ether	µg/kg	59	1.40	U	0.47 (U)	U	7500	0.41 (IB)
Styrene	µg/kg	64	5.80	U	1.20	U	4300	0.11 (IB)
Toluene	µg/kg	28	1.50	U	1.50	U	21000	1.50 (U)
m + p-Xylene	µg/kg	21	1.30	U	1.20	U	26000	0.11 (IB)
m-Xylene	µg/kg	36		U		U		
o-Xylene	µg/kg	21		U		U		
p-Xylene	µg/kg			U		U		
Semivolatile Organic Compounds by CLP 3/90								
1,2,4-Trichlorobenzene	µg/kg	350	360	U	410	U	390	410 (U)
1,2-Dichlorobenzene	µg/kg	350	360	U	410	U	390	410 (U)
1,3-Dichlorobenzene	µg/kg	350	360	U	410	U	390	410 (U)
1,4-Dichlorobenzene	µg/kg	350	360	U	410	U	390	410 (U)
2,2'-Oxybis(1-chloropropane)	µg/kg	350	360	U	410	U	390	410 (U)
2,4,5-Trichlorophenol	µg/kg	850	870	U	990	U	950	1000 (U)
2,4,6-Trichlorophenol	µg/kg	350	360	U	410	U	390	410 (U)
2,4-Dichlorophenol	µg/kg	350	360	U	410	U	390	410 (U)
2,4-Dimethylphenol	µg/kg	350	360	U	410	U	390	410 (U)
2,4-Dinitrophenol	µg/kg	850	870	U	990	U	950	1000 (U)
2,6-Dinitrotoluene	µg/kg	350	360	U	410	U	390	410 (U)
2-Chloronaphthalene	µg/kg	350	360	U	410	U	390	410 (U)
2-Chlorophenol	µg/kg	350	360	U	410	U	390	410 (U)
2-Methylnaphthalene	µg/kg	350	360	U	410	U	390	410 (U)
2-Methylphenol	µg/kg	350	360	U	410	U	390	410 (U)
2-Nitroaniline	µg/kg	850	870	U	990	U	950	1000 (U)
2-Nitrophenol	µg/kg	350	360	U	410	U	390	410 (U)
3,3'-Dichlorobenzidine	µg/kg	350	360	U	410	U	390	410 (U)
3-Nitroaniline	µg/kg	850	870	U	990	U	950	1000 (U)

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: SAMPLE ID: COLLECTION DATE: ASSOCIATED QC:	V4-B4	V4-B5	V4-B5	V4-B5	V4-B6	V4-B6	V4-B6		
	V4-B4-1719	V4-B5-0406	V4-B5-0911	V4-B5-1719	V4-B6-1921	V4-B6-1921	V4-B6-2426		
	09/08/94	09/14/94	09/14/94	09/14/94	09/07/94	09/07/94	09/07/94		
	TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		
CRITERIA UNITS:									
4,6-Dinitro-2-methylphenol	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	
µg/kg	850	U	870	U	990	U	950	U	
4-Bromophenyl phenyl ether	µg/kg	350	U	360	U	410	U	390	U
4-Chloro-3-methylphenol	µg/kg	350	U	360	U	410	U	390	U
4-Chloroaniline	µg/kg	350	U	360	U	410	U	390	U
4-Chlorophenyl phenyl ether	µg/kg	350	U	360	U	410	U	390	U
4-Methylphenol	µg/kg	350	U	360	U	410	U	390	U
4-Nitroaniline	µg/kg	850	U	870	U	990	U	950	U
4-Nitrophenol	µg/kg	850	U	870	U	990	U	950	U
Acenaphthene	µg/kg	350	U	360	U	410	U	390	U
Acenaphthylene	µg/kg	350	U	360	U	410	U	390	U
Anthracene	µg/kg	350	U	360	U	410	U	390	U
Benzo(a)anthracene	µg/kg	350	U	360	U	410	U	390	U
Benzo(a)pyrene	µg/kg	350	U	360	U	410	U	390	U
Benzo(b)fluoranthene	µg/kg	350	U	360	U	410	U	390	U
Benzo(g,h,i)perylene	µg/kg	350	U	360	U	410	U	390	U
Benzo(k)fluoranthene	µg/kg	350	U	360	U	410	U	390	U
Butyl benzyl phthalate	µg/kg	350	U	360	U	410	U	390	U
Carbazole	µg/kg	350	U	360	U	410	U	390	U
Chrysene	µg/kg	350	U	360	U	410	U	390	U
Di-n-butyl phthalate	µg/kg	350	U	74	(B)	66	(B)	65	(B)
Di-n-octyl phthalate	µg/kg	350	U	360	U	410	U	390	U
Dibenzo(a,h)anthracene	µg/kg	350	U	360	U	410	U	390	U
Dibenzofuran	µg/kg	350	U	360	U	410	U	390	U
Diethyl phthalate	µg/kg	350	U	360	U	410	U	390	U
Dimethyl phthalate	µg/kg	350	U	360	U	410	U	390	U
Fluoranthene	µg/kg	350	U	360	U	410	U	390	U
Fluorene	µg/kg	350	U	360	U	410	U	390	U
Hexachlorobenzene	µg/kg	350	U	360	U	410	U	390	U
Hexachlorobutadiene	µg/kg	350	U	360	U	410	U	390	U
Hexachlorocyclopentadiene	µg/kg	350	U	360	U	410	U	390	U
Hexachloroethane	µg/kg	350	U	360	U	410	U	390	U
Indeno(1,2,3-cd)pyrene	µg/kg	350	U	360	U	410	U	390	U
Isophorone	µg/kg	350	U	360	U	410	U	390	U
N-Nitroso-di-n-propylamine	µg/kg	350	U	360	U	410	U	390	U
N-Nitrosodiphenylamine(1)	µg/kg	350	U	360	U	410	U	390	U
Naphthalene	µg/kg	350	U	360	U	410	U	390	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

<b>LOCATOR:</b>		V4-B4	V4-B5	V4-B5	V4-B5	V4-B5	V4-B6	V4-B6
<b>SAMPLE ID:</b>		V4-B4-1719	V4-B5-0406	V4-B5-0911	V4-B5-1719	V4-B6-1921	V4-B6-2426	
<b>COLLECTION DATE:</b>		09/08/94	09/14/94	09/14/94	09/14/94	09/07/94	09/07/94	
<b>ASSOCIATED QC:</b>		TB-090894-1, ER-090894-1 FB-090894-P, FB-090894-D	TB-091494-1, ER-091394-1 FB-090894-P, FB-090894-D	TB-091494-1, ER-091394-1 FB-090894-P, FB-090894-D	TB-091494-1, ER-091394-1 FB-090894-P, FB-090894-D	TB-090794-1, ER-090894-1 FB-090894-P, FB-090894-D	TB-090794-1, ER-090894-1 FB-090894-P, FB-090894-D	
<b>CRITERIA UNITS:</b>								
Nitrobenzene	µg/kg	350	360	410	390	390	410	U
Pentachlorophenol	µg/kg	850	870	990	950	950	1000	U
Phenanthrene	µg/kg	350	360	410	390	390	410	U
Phenol	µg/kg	350	360	410	390	390	410	U
Pyrene	µg/kg	350	360	410	390	390	410	U
bis(2-Chloroethoxy)methane	µg/kg	350	360	410	390	390	410	U
bis(2-Chloroethyl)ether	µg/kg	350	360	410	390	390	410	U
bis(2-Ethylhexyl)phthalate	µg/kg	350	360	410	390	390	410	U
<b>TAL Metals by CLP 3/90</b>								
Aluminum	µg/l	3320	6170	7290	5630	3570	2920	U
Antimony	µg/l	11.90	6.70	8	7.20	13.30	14	U
Arsenic	µg/l	7.40	4.80	3.20	14.10	34.40	3.10	U
Barium	µg/l	10.90	16.10	16.90	13.30	45.60	6.40	U
Beryllium	µg/l	0.14	0.24	0.27	0.26	0.22	0.12	U
Cadmium	µg/l	0.98	0.75	0.85	0.81	1.18	1.20	U
Calcium	µg/l	793	1370	1550	1020	1120	1730	U
Chromium	µg/l	6.80	8.90	10.10	11.40	6.80	6	U
Cobalt	µg/l	5.70	5.60	8.20	5.40	7	6.20	U
Copper	µg/l	8.40	9.70	14.10	9.90	11.10	13.40	U
Iron	µg/l	8830	12600	13900	13000	13500	7660	U
Lead	µg/l	1920	2840	3410	3320	2200	1710	U
Magnesium	µg/l	101	290	403	149	2310	215	U
Manganese	µg/l	0.11	0.11	0.12	0.12	0.12	0.12	U
Mercury	µg/l	12.40	21.60	17.90	19	17	15.70	U
Nickel	µg/l	391	564	636	606	454	327	U
Potassium	µg/l	0.83	0.86	0.97	0.93	0.93	0.98	U
Selenium	µg/l	0.77	0.88	1	0.95	0.86	0.90	U
Silver	µg/l	109	112	197	239	150	190	U
Sodium	µg/l	0.77	0.79	0.90	0.85	0.86	0.90	U
Thallium	µg/l	7	9.50	11.30	8.30	9.80	6.80	U
Vanadium	µg/l	25.10	37.70	34.20	27.20	26.80	19	U
Zinc	µg/l	1.90	1.40	1.60	2700	12	12	U
TPH by 8015 Modified California Luft	mg/kg	250	0.50	0.50	4110	0.50	0.50	U
TPH-Extractable as Diesel	mg/kg							U
TPH-Purgeable as Gasoline	mg/kg							U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: SAMPLE ID: COLLECTION DATE: ASSOCIATED QC:	V4-BG	V4-BG	V4-BG	V4-BG	V4-BG	V4-BG
	V4-BG-0911	V4-BG-1416	V4-BG-1416D	V4-BG-1921		
	09/10/94	09/10/94	09/10/94	09/10/94		
	TB-091094-1	TB-091094-1	TB-091094-1	TB-091094-1		
	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D
<b>CRITERIA UNITS:</b>						
<b>Organic Compounds by 8010</b>						
Halogenated Volatile Organic Compounds by 8010	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
1,1,1,2-Tetrachloroethane	0.94	U	0.93	U	0.98	U
1,1,1-Trichloroethane	2.80	U	2.80	U	2.90	U
1,1,2,2-Tetrachloroethane	0.63	U	0.62	U	0.65	U
1,1,2-Trichloroethane	0.89	U	0.88	U	0.92	U
1,1-Dichloroethane	0.78	U	0.77	U	0.82	U
1,1-Dichloroethane	0.89	U	0.88	U	0.92	U
1,1-Dichloroethane	0.89	U	0.88	U	0.92	U
1,2,3-Trichloropropane	0.94	U	0.93	U	0.06	U
1,2-Dibromoethane (Ethylene di	1.40	U	1.30	U	1.40	U
1,2-Dichlorobenzene	1.50	U	1.40	U	1.50	U
1,2-Dichloroethane	0.68	U	0.67	U	0.71	U
1,2-Dichloropropane	0.68	U	0.67	U	0.71	U
1,3-Dichlorobenzene	1.10	U	1.90	U	1.20	U
1,4-Dichlorobenzene	1.50	U	1.40	U	1.50	U
2-Chloroethyl vinyl ether	1.10	U	1.10	U	1.20	U
2-Chlorotoluene	1	U	1	U	1.10	U
4-Chlorotoluene	1.10	U	1.10	U	1.20	U
Bromobenzene	0.78	U	0.77	U	0.82	U
Bromochloromethane	0.94	U	0.93	U	0.98	U
Bromodichloromethane	1	U	1	U	1.10	U
Bromoform	0.10	(J)	0.93	U	0.98	U
Bromomethane	2.90	U	2.90	U	3	U
Carbon tetrachloride	0.68	U	0.67	U	0.71	U
Chlorobenzene	1.90	U	1.90	U	2	U
Chloroethane	2.70	U	2.70	U	2.80	U
Chloroform	1	U	1	U	1.10	U
Chloromethane	2.60	U	2.60	U	3.20	U
Cis-1,3-Dichloropropene	0.99	U	0.98	U	3.10	U
Dibromochloromethane	0.83	U	0.82	U	1.20	U
Dibromomethane	0.94	U	0.93	U	1.20	U
Methylene chloride	1.50	(B)	1.40	(B)	1	U
Tetrachloroethane	0.83	U	0.82	U	1	U
Trans-1,2-Dichloroethene	1.10	U	1.10	U	1.40	U
Trans-1,3-Dichloropropene	0.89	U	0.88	U	1.10	U
Trichloroethene	0.83	U	0.82	U	1	U
Vinyl chloride	2.70	U	2.70	U	3.20	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

<b>LOCATOR:</b> <b>SAMPLE ID:</b> <b>COLLECTION DATE:</b> <b>ASSOCIATED QC:</b>	V4-BG	V4-BG	V4-BG	V4-BG	V4-BG	V4-BG
	V4-BG-0911	V4-BG-1416	V4-BG-1416D	V4-BG-1921		
	09/10/94	09/10/94	09/10/94	09/10/94		
	TB-091094-1	TB-091094-1	TB-091094-1	TB-091094-1	FB-090894-P, FB-090894-D	FB-090894-P, FB-090894-D
<b>CRITERIA UNITS:</b>						
<b>Aromatic Volatile Organic Compounds by 8020</b>						
1,2-Dichlorobenzene	µg/kg	0.61	(B)	0.39	(B)	0.39
1,3-Dichlorobenzene	µg/kg	0.42	(B)	1.10	U	0.33
1,4-Dichlorobenzene	µg/kg	0.36	(B)	0.56	(B)	0.56
Benzene	µg/kg	0.06	(I)	0.13	(I)	0.11
Chlorobenzene	µg/kg	0.94	U	0.93	U	0.05
Ethylbenzene	µg/kg	0.60	(B)	0.10	(B)	0.50
Methyl-tert-butyl ether	µg/kg	11	U	11	U	14
Styrene	µg/kg	1.60	U	1.50	U	1.90
Toluene	µg/kg	0.21	(B)	0.19	(B)	0.44
m + p-Xylene	µg/kg	-		-		-
m-Xylene	µg/kg	0.19	(B)	0.10	(B)	0.67
o-Xylene	µg/kg	0.08	(B)	0.13	(B)	0.65
p-Xylene	µg/kg	0.19	(B)	0.10	(B)	0.67
<b>Semivolatile Organic Compounds by CLP 3190</b>						
1,2,4-Trichlorobenzene	µg/kg	340	U	340	U	410
1,2-Dichlorobenzene	µg/kg	340	U	340	U	410
1,3-Dichlorobenzene	µg/kg	340	U	340	U	410
1,4-Dichlorobenzene	µg/kg	340	U	340	U	410
2,2'-Oxybis(1-chloropropane)	µg/kg	340	U	340	U	410
2,4,5-Trichlorophenol	µg/kg	830	U	820	U	1000
2,4,6-Trichlorophenol	µg/kg	340	U	340	U	410
2,4-Dichlorophenol	µg/kg	340	U	340	U	410
2,4-Dimethylphenol	µg/kg	340	U	340	U	410
2,4-Dinitrophenol	µg/kg	830	U	820	U	1000
2,4-Dinitrotoluene	µg/kg	340	U	340	U	410
2,6-Dinitrotoluene	µg/kg	340	U	340	U	410
2-Chloronaphthalene	µg/kg	340	U	340	U	410
2-Chlorophenol	µg/kg	340	U	340	U	410
2-Methylnaphthalene	µg/kg	340	U	340	U	410
2-Methylphenol	µg/kg	340	U	340	U	410
2-Nitroaniline	µg/kg	830	U	820	U	1000
2-Nitrophenol	µg/kg	340	U	340	U	410
3,3'-Dichlorobenzidine	µg/kg	340	U	340	U	410
3-Nitroaniline	µg/kg	830	U	820	U	1000



**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: SAMPLE ID: COLLECTION DATE: ASSOCIATED QC:	V4-BG V4-BG-0911 09/10/94 TB-091094-1 FB-090894-P, FB-090894-D		V4-BG V4-BG-1416 09/10/94 TB-091094-1 FB-090894-P, FB-090894-D		V4-BG V4-BG-1416D 09/10/94 TB-091094-1 FB-090894-P, FB-090894-D		V4-BG V4-BG-1921 09/10/94 TB-091094-1 FB-090894-P, FB-090894-D	
	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
<b>CRITERIA UNITS:</b>								
4,6-Dinitro-2-methylphenol	µg/kg	830	U	820	U	870	1000	U
4-Bromophenyl phenyl ether	µg/kg	340	U	340	U	360	410	U
4-Chloro-3-methylphenol	µg/kg	340	U	340	U	360	410	U
4-Chloroaniline	µg/kg	340	U	340	U	360	410	U
4-Chlorophenyl phenyl ether	µg/kg	340	U	340	U	360	410	U
4-Methylphenol	µg/kg	340	U	340	U	360	410	U
4-Nitroaniline	µg/kg	830	U	820	U	870	1000	U
4-Nitrophenol	µg/kg	830	U	820	U	870	1000	U
Acenaphthene	µg/kg	340	U	340	U	360	410	U
Acenaphthylene	µg/kg	340	U	340	U	360	410	U
Anthracene	µg/kg	340	U	340	U	360	410	U
Benzo(a)anthracene	µg/kg	340	U	340	U	360	410	U
Benzo(a)pyrene	µg/kg	340	U	340	U	360	410	U
Benzo(b)fluoranthene	µg/kg	340	U	340	U	360	410	U
Benzo(g,h,i)perylene	µg/kg	340	U	340	U	360	410	U
Benzo(k)fluoranthene	µg/kg	340	U	340	U	360	410	U
Butyl benzyl phthalate	µg/kg	340	U	340	U	360	410	U
Carbazole	µg/kg	340	U	340	U	360	410	U
Chrysene	µg/kg	340	U	340	U	360	410	U
Di-n-butyl phthalate	µg/kg	340	U	35	U	44	410	U
Di-n-octyl phthalate	µg/kg	340	U	340	U	360	410	U
Dibenz(a,h)anthracene	µg/kg	340	U	340	U	360	410	U
Dibenzofuran	µg/kg	340	U	340	U	360	410	U
Diethyl phthalate	µg/kg	340	U	340	U	360	410	U
Dimethyl phthalate	µg/kg	340	U	340	U	360	410	U
Fluoranthene	µg/kg	340	U	340	U	360	410	U
Fluorene	µg/kg	340	U	340	U	360	410	U
Hexachlorobenzene	µg/kg	340	U	340	U	360	410	U
Hexachlorobutadiene	µg/kg	340	U	340	U	360	410	U
Hexachlorocyclopentadiene	µg/kg	340	U	340	U	360	410	U
Hexachloroethane	µg/kg	340	U	340	U	360	410	U
Indeno(1,2,3-cd)pyrene	µg/kg	340	U	340	U	360	410	U
Isophorone	µg/kg	340	U	340	U	360	410	U
N-Nitroso-di-n-propylamine	µg/kg	340	U	340	U	360	410	U
N-Nitrosodiphenylamine(1)	µg/kg	340	U	340	U	360	410	U
Naphthalene	µg/kg	340	U	340	U	360	410	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

	LOCATOR:	V4-BG	V4-BG	V4-BG	V4-BG	V4-BG	V4-BG
	SAMPLE ID:	V4-BG-0911	V4-BG-1416	V4-BG-1416D	V4-BG-1921		
	COLLECTION DATE:	09/10/94	09/10/94	09/10/94	09/10/94		
	ASSOCIATED QC:	TB-091094-1 FB-090894-P, FB-090894-D	TB-091094-1 FB-090894-P, FB-090894-D	TB-091094-1 FB-090894-P, FB-090894-D	TB-091094-1 FB-090894-P, FB-090894-D		
<b>CRITERIA UNITS:</b>							
Nitrobenzene	µg/kg	340	340	360	410	U	U
Pentachlorophenol	µg/kg	830	820	870	1000	U	U
Phenanthrene	µg/kg	340	340	360	410	U	U
Phenol	µg/kg	340	340	360	410	U	U
Pyrene	µg/kg	340	340	360	410	U	U
bis(2-Chloroethoxy)methane	µg/kg	340	340	360	410	U	U
bis(2-Chloroethyl)ether	µg/kg	340	340	360	410	U	U
bis(2-Ethylhexyl)phthalate	µg/kg	340	340	360	410	U	U
<b>TAL Metals by CLP 3/90</b>							
Aluminum	µg/l	3540	3790	5280	4140	U	U
Antimony	µg/l	11.60	11.50	12.10	14	3.50	U
Arsenic	µg/l	3.10	8.90	9.60	9	0.13	U
Barium	µg/l	9.60	13	13.60	0	1.20	U
Beryllium	µg/l	0.17	0.10	0.13	0	1700	U
Cadmium	µg/l	0.96	0.95	1	1	8.30	U
Calcium	µg/l	1240	1450	1750	10500	8.10	U
Chromium	µg/l	7.70	6.90	10.60	13.90	3.80	U
Cobalt	µg/l	7.40	8.50	10.70	2520	263	U
Copper	µg/l	11.70	14.90	15.30	10500	0.13	U
Iron	µg/l	7700	13200	16500	10500	0.98	U
Lead	µg/l	4.10	3.60	4	3.80	0.90	U
Magnesium	µg/l	1930	1950	2870	2520	10.10	U
Manganese	µg/l	255	580	548	263	26.70	U
Mercury	µg/l	0.10	0.10	0.11	0.13		
Nickel	µg/l	15.10	18.70	21.20	16.20		
Potassium	µg/l	363	392	524	434		
Selenium	µg/l	0.81	0.80	0.85	0.98		
Silver	µg/l	0.75	0.74	0.78	0.90		
Sodium	µg/l	114	161	169	172		
Thallium	µg/l	0.75	0.74	0.78	0.90		
Vanadium	µg/l	6.80	9.60	13.40	10.10		
Zinc	µg/l	18.30	26.40	31.80	26.70		
<b>TPH by 8015 Modified California Luft</b>							
TPH-Extractable as Diesel	mg/kg	6.90	10	11	12	U	U
TPH-Purgeable as Gasoline	mg/kg	0.50	0.50	0.50	0.50	U	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: SAMPLE ID: COLLECTION DATE: ASSOCIATED QC:	V3-BG1		V3-BG1		V3-BG1		V3-BG1		V3-BG1		V3-BG1		V3-MW1		V3-MW1	
	TB-102494-2.ER-102494-1	FB-092494-P	TB-102494-2.ER-102494-1	FB-092494-P	TB-102494-2.ER-102494-1	FB-092494-P	TB-102494-2.ER-102494-1	FB-092494-P	TB-102494-2.ER-102494-1	FB-092494-P	TB-102494-2.ER-102494-1	FB-092494-P	TB-103194-1.ER-102494-1	FB-092494-P	TB-103194-1.ER-102494-1	FB-092494-P
CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Organic Compounds by 8010																
Halogenated Volatile Organic	µg/l															
1,1,1,2-Tetrachloroethane	0.35	U			0.35	U					0.35	U			0.35	U
1,1,1-Trichloroethane	0.22	U			0.02	U					0.35	U			0.35	U
1,1,2,2-Tetrachloroethane	0.40	U			0.40	U					0.40	U			0.40	U
1,1,2-Trichloroethane	0.25	U			0.25	U					0.25	U			0.25	U
1,1-Dichloroethane	0.35	U			0.35	U					0.35	U			0.35	U
1,1-Dichloroethene	0.35	U			0.35	U					0.35	U			0.35	U
1,2,3-Trichloropropane	0.35	U			0.35	U					0.35	U			0.35	U
1,2-Dibromoethane (Ethylene di	0.35	U			0.35	U					0.35	U			0.35	U
1,2-Dichloroethane	0.30	U			0.30	U					0.30	U			0.30	U
1,2-Dichloropropane	0.25	U			0.25	U					0.25	U			0.25	U
1,3-Dichlorobenzene	0.30	U			0.30	U					0.30	U			0.30	U
1,4-Dichlorobenzene	0.20	U			0.20	U					0.20	U			0.20	U
2-Chloroethyl vinyl ether	0.20	U			0.20	U					0.20	U			0.20	U
2-Chlorotoluene	0.40	U			0.40	U					0.40	U			0.40	U
4-Chlorotoluene	0.25	U			0.25	U					0.25	U			0.25	U
Bromobenzene	0.35	U			0.35	U					0.35	U			0.35	U
Bromochloromethane	0.85	U			0.85	U					0.85	U			0.85	U
Bromodichloromethane	0.25	U			0.25	U					0.25	U			0.25	U
Bromoform	0.40	U			0.40	U					0.40	U			0.40	U
Bromomethane	0.50	U			0.50	U					0.50	U			0.50	U
Carbon tetrachloride	0.45	U			0.45	U					0.45	U			0.45	U
Chlorobenzene	0.35	U			0.35	U					0.35	U			0.35	U
Chloroethane	0.35	U			0.35	U					0.35	U			0.35	U
Chloroform	0.50	U			0.50	U					0.50	U			0.50	U
Chloromethane	0.17	U			0.17	U					0.17	U			0.17	U
Cis-1,3-Dichloropropene	0.50	U			0.50	U					0.50	U			0.50	U
Dibromochloromethane	0.30	U			0.30	U					0.30	U			0.30	U
Dibromomethane	0.30	U			0.30	U					0.30	U			0.30	U
Methylene chloride	0.40	U			0.40	U					0.40	U			0.40	U
Tetrachloroethane	1.40	B			1.60	B					1.60	B			1	B
Trans-1,2-Dichloroethene	0.30	U			0.30	U					0.30	U			0.30	U
Trans-1,3-Dichloropropene	0.30	U			0.30	U					0.30	U			0.30	U
Trichloroethene	0.25	U			0.25	U					0.25	U			0.25	U
Vinyl chloride	0.15	U			0.18	U					0.18	U			0.24	U
	0.55	U			0.55	U					0.55	U			0.55	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4  
Vermont Air National Guard Base

LOCATOR:					
SAMPLE ID:	V3-BG1	V3-BG1-1094	V3-BG1	V3-BG1-1094F	V3-MW1
COLLECTION DATE:	10/24/94	10/24/94	10/24/94	10/24/94	10/31/94
ASSOCIATED QC:	TB-102494-2.ER-102494-P FB-092494-P	TB-102494-2.ER-102494-1 FB-092494-P	TB-102494-2.ER-102494-1 FB-092494-P	TB-102494-2.ER-102494-1 FB-092494-P	TB-103194-1.ER-102494-1 FB-092494-P
CRITERIA UNITS:					
Aromatic Volatile Organic Compounds by 8020	RESULT	QUAL	RESULT	QUAL	RESULT
1,2-Dichlorobenzene	µg/l	U	-	U	-
1,3-Dichlorobenzene	µg/l	0.15	-	0.15	B
1,4-Dichlorobenzene	µg/l	0.20	-	0.20	U
Benzene	µg/l	0.15	-	0.15	U
Chlorobenzene	µg/l	0.35	-	0.35	U
Ethylbenzene	µg/l	0.25	-	0.25	U
Methyl-tert-butyl ether	µg/l	0.20	-	0.20	U
Styrene	µg/l	5	-	5	U
Toluene	µg/l	0.25	-	0.25	U
m + p-Xylene	µg/l	0.47	-	0.42	840
m-Xylene	µg/l	-	-	-	520
o-Xylene	µg/l	0.25	(B)	0.19	-
p-Xylene	µg/l	0.20	U	0.20	2.30
	µg/l	0.25	(B)	0.19	-
Semivolatile Organic Compounds by CLP 3/90					
1,2,4-Trichlorobenzene	µg/l	5	-	5	U
1,2,2'-Oxybis(1-chloropropane)	µg/l	5	-	5	U
2,4,5-Trichlorophenol	µg/l	20	-	20	U
2,4,6-Trichlorophenol	µg/l	5	-	5	U
2,4-Dichlorophenol	µg/l	5	-	5	U
2,4-Dimethylphenol	µg/l	5	-	5	U
2,4-Dinitrophenol	µg/l	20	-	20	U
2,4-Dinitrotoluene	µg/l	5	-	5	U
2,6-Dinitrotoluene	µg/l	5	-	5	U
2-Chloronaphthalene	µg/l	5	-	5	U
2-Chlorophenol	µg/l	5	-	5	U
2-Methylnaphthalene	µg/l	5	-	5	U
2-Methylphenol	µg/l	5	-	5	U
2-Nitroaniline	µg/l	20	-	20	U
2-Nitrophenol	µg/l	5	-	5	U
3,3'-Dichlorobenzidine	µg/l	5	-	5	U
3-Nitroaniline	µg/l	20	-	20	U
4,6-Dinitro-2-methylphenol	µg/l	20	-	20	U
4-Bromophenyl phenyl ether	µg/l	5	-	5	U
4-Chloro-3-methylphenol	µg/l	5	-	5	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR:	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-MW1	V3-MW1	V3-MW1
SAMPLE ID:	V3-BG1-1094	V3-BG1-1094	V3-BG1-1094F	V3-BG1-1094D	V3-BG1-1094DF	V3-BG1-1094F	V3-BG1-1094D	V3-BG1-1094DF	V3-BG1-1094F	V3-BG1-1094D	V3-BG1-1094DF	V3-BG1-1094F	V3-BG1-1094D	V3-BG1-1094DF	V3-BG1-1094F	V3-MW1-1094	V3-MW1-1094	V3-MW1-1094F
COLLECTION DATE:	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/24/94	10/31/94	10/31/94	10/31/94
ASSOCIATED QC:	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-102494-2.ER-102494-1	TB-103194-1.ER-102494-1	TB-103194-1.ER-102494-1	TB-103194-1.ER-102494-1
	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P	FB-092494-P
CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4-Chloroaniline	µg/l	5	U		5	U									5	U		
4-Chlorophenyl phenyl ether	µg/l	5	U		5	U									5	U		
4-Methylphenol	µg/l	5	U		5	U									4	(U)		
4-Nitroaniline	µg/l	20	U		20	U									20	U		
4-Nitrophenol	µg/l	20	U		20	U									20	U		
Acenaphthene	µg/l	5	U		5	U									5	U		
Acenaphthylene	µg/l	5	U		5	U									5	U		
Anthracene	µg/l	5	U		5	U									5	U		
Benzo(a)anthracene	µg/l	5	U		5	U									5	U		
Benzo(a)pyrene	µg/l	5	U		5	U									5	U		
Benzo(b)fluoranthene	µg/l	5	U		5	U									5	U		
Benzo(g,h,i)perylene	µg/l	5	U		5	U									5	U		
Benzo(k)fluoranthene	µg/l	5	U		5	U									5	U		
Butyl benzyl phthalate	µg/l	5	U		5	U									5	U		
Chrysene	µg/l	5	U		5	U									5	U		
Di-n-butyl phthalate	µg/l	0.60	U		5	U									5	U		
Di-n-octyl phthalate	µg/l	5	U		5	U									5	U		
Dibenzo(a,h)anthracene	µg/l	5	U		5	U									5	U		
Dibenzofuran	µg/l	5	U		5	U									5	U		
Diethyl phthalate	µg/l	5	U		5	U									5	U		
Dimethyl phthalate	µg/l	5	U		5	U									5	U		
Fluoranthene	µg/l	5	U		5	U									5	U		
Fluorene	µg/l	5	U		5	U									5	U		
Hexachlorobenzene	µg/l	5	U		5	U									5	U		
Hexachlorobutadiene	µg/l	5	U		5	U									5	U		
Hexachlorocyclopentadiene	µg/l	5	U		5	U									5	U		
Hexachloroethane	µg/l	5	U		5	U									5	U		
Indeno(1,2,3-cd)pyrene	µg/l	5	U		5	U									5	U		
Isophorone	µg/l	5	U		5	U									5	U		
N-Nitroso-di-n-propylamine	µg/l	5	U		5	U									5	U		
N-Nitrosodiphenylamine(1)	µg/l	5	U		5	U									58	U		
Naphthalene	µg/l	5	U		5	U									5	U		
Nitrobenzene	µg/l	5	U		5	U									5	U		
Pentachlorophenol	µg/l	20	U		20	U									20	U		
Phenanthrene	µg/l	5	U		5	U									5	U		
Phenol	µg/l	5	U		5	U									3	(U)		

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V3-BG1 V3-BG1 V3-BG1 V3-BG1 V3-BG1 V3-MW1 V3-MW1 V3-MW1  
SAMPLE ID: V3-BG1-1094 V3-BG1-1094F V3-BG1-1094D V3-BG1-1094DF V3-MW1-1094 V3-MW1-1094F V3-MW1-1094F  
COLLECTION DATE: 10/24/94 10/24/94 10/24/94 10/24/94 10/31/94 10/31/94 10/31/94  
ASSOCIATED QC: TB-102494-2,ER-102494-1 TB-102494-2,ER-102494-1 TB-102494-2,ER-102494-1 TB-102494-2,ER-102494-1 TB-103194-1,ER-102494-1 TB-103194-1,ER-102494-1 TB-103194-1,ER-102494-1  
FB-092494-P FB-092494-P FB-092494-P FB-092494-P FB-092494-P FB-092494-P FB-092494-P

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Pyrene	µg/l	5	U	-	U	5	U	-	U	5	U	-	U
bis(2-Chloroethoxy)methane	µg/l	5	U	-	U	5	U	-	U	5	U	-	U
bis(2-Chloroethyl)ether	µg/l	5	U	-	U	5	U	-	U	5	U	-	U
bis(2-Ethylhexyl)phthalate	µg/l	7	U	-	U	8	U	-	U	2	(J)	-	U
TAL Metals by CLP 3/90													
Aluminum	µg/l	3860	U	63.60	(B)	3230	U	74.30	(B)	6190	J	52.70	(B)
Antimony	µg/l	50.80	U	50.80	U	50.80	U	50.80	U	50.80	U	50.80	U
Arsenic	µg/l	4.90	(B)	1.70	U	4.60	(B)	1.70	U	2.90	(J)	1.70	U
Barium	µg/l	35	U	7.90	U	32.40	U	8.10	U	153	U	28.40	U
Beryllium	µg/l	0.50	U	0.50	U	0.50	U	0.50	U	0.85	(J)	0.50	U
Cadmium	µg/l	4.30	U	4.30	U	4.30	U	4.30	U	4.30	U	4.30	U
Calcium	µg/l	54800	U	50700	(B)	53400	U	51500	U	170000	U	94200	U
Chromium	µg/l	9.80	U	6.30	(B)	7.30	U	5.40	U	8.80	(J)	5.40	U
Cobalt	µg/l	11.80	U	11.80	U	11.80	U	11.80	U	62.10	U	14.40	U
Copper	µg/l	23.50	U	7.60	U	21.60	U	7.60	U	82.70	U	7.60	U
Iron	µg/l	9810	U	63	(B)	8000	U	63	(B)	7560	B	105	B
Lead	µg/l	7.20	J	2.30	U	6.20	J	2.30	U	25.10	U	2.30	U
Magnesium	µg/l	9660	U	7880	U	8950	U	7900	U	29700	U	20800	U
Manganese	µg/l	553	U	81.60	U	540	U	82	U	7340	U	2840	U
Mercury	µg/l	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Nickel	µg/l	17.30	U	17.30	U	19.90	U	17.30	U	96.20	U	21.60	U
Potassium	µg/l	1890	U	1170	U	1620	U	1010	U	2350	U	1660	U
Selenium	µg/l	2.80	U	2.80	U	2.80	U	2.80	U	2.80	U	2.80	U
Silver	µg/l	3.20	U	3.20	U	3.20	U	3.20	U	3.20	U	3.20	U
Sodium	µg/l	109000	U	103000	U	98100	U	101000	U	309000	U	254000	U
Thallium	µg/l	36	U	36	U	36	U	36.04	U	36	U	5.40	R
Vanadium	µg/l	8.70	U	5.40	U	7.40	U	5.40	U	7.30	U	5.40	U
Zinc	µg/l	28.30	U	5.20	U	28.30	U	5.20	U	107	J	5.20	U

TPH by 8015 Modified California Luft mg/l 27  
TPH-Extractable as Diesel mg/l 12  
TPH-Purgeable as Gasoline

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

<b>LOCATOR:</b> <b>SAMPLE ID:</b> <b>COLLECTION DATE:</b> <b>ASSOCIATED QC:</b>	V3-MW3	V3-MW3	V3-MW3	V4-BG1	V4-BG1	V4-MW2	V4-MW2
	V3-MW3-1094	V3-MW3-1094F	V3-MW3-1094	V4-BG1-1094	V4-BG1-1094F	V4-MW2-1094	V4-MW2-1094F
	10/31/94	10/31/94	10/31/94	10/25/94	10/25/94	10/27/94	10/27/94
	TB-103194-1.ER-102494-1 FB-092494-P	TB-103194-1.ER-102494-1 FB-092494-P	TB-103194-1.ER-102494-1 FB-092494-P	TB-102594-1.ER-102494-1 FB-092494-P	TB-102594-1.ER-102494-1 FB-092494-P	TB-102794-1.ER-102494-1 FB-092494-P	TB-102794-1.ER-102494-1 FB-092494-P
<b>CRITERIA UNITS:</b>							
<b>Organic Compounds by 8010</b>							
Halogenated Volatile Organic Compounds	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT
1,1,1,2-Tetrachloroethane	µg/l	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	µg/l	0.35	U	0.35	U	0.35	U
1,1,2,2-Tetrachloroethane	µg/l	0.40	U	0.40	U	0.40	U
1,1,2-Trichloroethane	µg/l	0.25	U	0.25	U	0.25	U
1,1-Dichloroethane	µg/l	0.35	U	0.35	U	0.35	U
1,1-Dichloroethene	µg/l	0.35	U	0.35	U	0.35	U
1,2,3-Trichloropropane	µg/l	0.35	U	0.35	U	0.35	U
1,2-Dibromoethane (Ethylene di	µg/l	0.35	U	0.35	U	0.35	U
1,2-Dichlorobenzene	µg/l	0.30	U	0.30	U	0.30	U
1,2-Dichloroethane	µg/l	0.25	U	0.25	U	0.25	U
1,2-Dichloropropane	µg/l	0.30	U	0.30	U	0.30	U
1,3-Dichlorobenzene	µg/l	0.20	U	0.20	U	0.20	U
1,4-Dichlorobenzene	µg/l	0.20	U	0.20	U	0.20	U
2-Chloroethyl vinyl ether	µg/l	0.40	U	0.40	U	0.40	U
2-Chlorotoluene	µg/l	0.25	U	0.25	U	0.25	U
4-Chlorotoluene	µg/l	0.35	U	0.35	U	0.35	U
Bromobenzene	µg/l	0.85	U	0.85	U	0.85	U
Bromochloromethane	µg/l	0.25	U	0.25	U	0.25	U
Bromodichloromethane	µg/l	0.40	U	0.40	U	0.40	U
Bromoform	µg/l	0.50	U	0.50	U	0.50	U
Bromomethane	µg/l	0.45	U	0.45	U	0.45	U
Carbon tetrachloride	µg/l	0.35	U	0.35	U	0.35	U
Chlorobenzene	µg/l	0.35	U	0.35	U	0.35	U
Chloroethane	µg/l	0.50	U	0.50	U	0.50	U
Chloroform	µg/l	0.35	U	0.35	U	0.35	U
Chloromethane	µg/l	0.50	U	0.50	U	0.50	U
Cis-1,3-Dichloropropene	µg/l	0.30	U	0.30	U	0.30	U
Dibromochloromethane	µg/l	0.30	U	0.30	U	0.30	U
Dibromomethane	µg/l	0.40	U	0.40	U	0.40	U
Methylene chloride	µg/l	0.64	(B)	1.60	B	1.60	B
Tetrachloroethene	µg/l	0.30	U	0.30	U	0.30	U
Trans-1,2-Dichloroethene	µg/l	0.30	U	0.30	U	0.30	U
Trans-1,3-Dichloropropene	µg/l	0.25	U	0.25	U	0.25	U
Trichloroethene	µg/l	0.30	U	0.30	U	0.30	U
Vinyl chloride	µg/l	0.55	U	0.55	U	0.55	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

<b>LOCATOR:</b>		V3-MW3	V3-MW3	V4-BG1	V4-BG1	V4-MW2	V4-MW2
<b>SAMPLE ID:</b>		V3-MW3-1094	V3-MW3-1094F	V4-BG1-1094	V4-BG1-1094F	V4-MW2-1094	V4-MW2-1094F
<b>COLLECTION DATE:</b>		10/31/94	10/31/94	10/25/94	10/25/94	10/27/94	10/27/94
<b>ASSOCIATED QC:</b>		TB-103194-1,ER-102494-1 FB-092494-P	TB-103194-1,ER-102494-1 FB-092494-P	TB-102594-1,ER-102494-1 FB-092494-P	TB-102594-1,ER-102494-1 FB-092494-P	TB-102794-1,ER-102494-1 FB-092494-P	TB-102794-1,ER-102494-1 FB-092494-P
<b>CRITERIA UNITS:</b>							
<b>Organic Compounds by 8020</b>							
Aromatic Volatile	µg/l	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
1,2-Dichlorobenzene	µg/l	0.90	-	0.15	U	25	-
1,3-Dichlorobenzene	µg/l	2.50	-	0.20	U	6.30	-
1,4-Dichlorobenzene	µg/l	0.28	U	0.15	U	0.15	U
Benzene	µg/l	0.35	U	0.35	U	84	-
Chlorobenzene	µg/l	0.54	-	0.25	U	0.23	U
Ethylbenzene	µg/l	0.55	-	0.20	U	160	-
Methyl-tert-butyl ether	µg/l	5	U	5	U	4.90	U
Styrene	µg/l	0.36	-	0.25	U	0.25	U
Toluene	µg/l	0.33	B	0.25	U	18	-
m + p-Xylene	µg/l	-	U	0.50	U	210	-
o-Xylene	µg/l	0.54	U	-	-	-	-
p-Xylene	µg/l	0.73	U	0.20	U	0.79	-
	µg/l	0.54	U	-	-	-	-
<b>Semivolatile Organic Compounds by CLP 3/90</b>							
1,2,4-Trichlorobenzene	µg/l	5	U	5	U	5	U
2,2'-Oxybis(1-chloropropane)	µg/l	5	U	5	U	5	U
2,4,5-Trichlorophenol	µg/l	20	U	20	U	20	U
2,4,6-Trichlorophenol	µg/l	5	U	5	U	5	U
2,4-Dichlorophenol	µg/l	5	U	5	U	5	U
2,4-Dimethylphenol	µg/l	5	U	5	U	6	-
2,4-Dinitrophenol	µg/l	20	U	20	U	20	U
2,4-Dinitrotoluene	µg/l	5	U	5	U	5	U
2,6-Dinitrotoluene	µg/l	5	U	5	U	5	U
2-Chloronaphthalene	µg/l	5	U	5	U	5	U
2-Chlorophenol	µg/l	5	U	5	U	46	-
2-Methylnaphthalene	µg/l	0.60	U	5	U	5	U
2-Methylphenol	µg/l	5	U	5	U	20	U
2-Nitroaniline	µg/l	20	U	20	U	5	U
2-Nitrophenol	µg/l	5	U	5	U	5	U
3,3'-Dichlorobenzidine	µg/l	5	U	5	U	5	U
3-Nitroaniline	µg/l	20	U	20	U	20	U
4,6-Dinitro-2-methylphenol	µg/l	20	U	20	U	20	U
4-Bromophenyl phenyl ether	µg/l	5	U	5	U	5	U
4-Chloro-3-methylphenol	µg/l	5	U	5	U	5	U



**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

CRITERIA UNITS:	V3-MW3		V3-MW3-1094		V3-MW3		V4-BG1		V4-BG1-1094F		V4-MW2		V4-MW2	
	LOCATOR:	SAMPLE ID:	COLLECTION DATE:	ASSOCIATED QC:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4-Chloroaniline					5	U								
4-Chlorophenyl phenyl ether					5	U								
4-Methylphenol					5	U								
4-Nitroaniline					20	U								
4-Nitrophenol					20	U								
Acenaphthene					5	U								
Acenaphthylene					5	U								
Anthracene					5	U								
Benzo(a)anthracene					5	U								
Benzo(a)pyrene					5	U								
Benzo(b)fluoranthene					5	U								
Benzo(g,h,i)perylene					5	U								
Benzo(k)fluoranthene					5	U								
Butyl benzyl phthalate					5	U								
Chrysene					5	U								
Di-n-butyl phthalate					5	U								
Di-n-octyl phthalate					5	U								
Dibenz(a,h)anthracene					5	U								
Dibenzofuran					5	U								
Diethyl phthalate					5	U								
Dimethyl phthalate					5	U								
Fluoranthene					5	U								
Fluorene					5	U								
Hexachlorobenzene					5	U								
Hexachlorobutadiene					5	U								
Hexachlorocyclopentadiene					5	U								
Hexachloroethane					5	U								
Indeno(1,2,3-cd)pyrene					5	U								
Isophorone					5	U								
N-Nitroso-di-n-propylamine					5	U								
N-Nitrosodiphenylamine(1)					5	U								
Naphthalene					5	U								
Nitrobenzene					5	U								
Pentachlorophenol					20	U								
Phenanthrene					5	U								
Phenol					5	U								

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
 Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4  
 Vermont Air National Guard Base

LOCATOR:		V3-MW3	V3-MW3	V4-BG1	V4-BG1	V4-MW2	V4-MW2
SAMPLE ID:		V3-MW3-1094	V3-MW3-1094F	V4-BG1-1094	V4-BG1-1094F	V4-MW2-1094	V4-MW2-1094F
COLLECTION DATE:		10/31/94	10/31/94	10/25/94	10/25/94	10/27/94	10/27/94
ASSOCIATED QC:		TB-103194-1,ER-102494-1 FB-092494-P	TB-103194-1,ER-102494-1 FB-092494-P	TB-102594-1,ER-102494-1 FB-092494-P	TB-102594-1,ER-102494-1 FB-092494-P	TB-102794-1,ER-102494-1 FB-092494-P	TB-102794-1,ER-102494-1 FB-092494-P
<b>CRITERIA UNITS:</b>							
Pyrene	µg/l	5	U	5	U	5	U
bis(2-Chloroethoxy)methane	µg/l	5	U	5	U	5	U
bis(2-Chloroethyl)ether	µg/l	5	U	5	U	5	U
bis(2-Ethylhexyl)phthalate	µg/l	1	U	5	U	8	U
<b>TAL Metals by CLP 3/90</b>							
Aluminum	µg/l	4840	J	7960	U	5380	U
Antimony	µg/l	50.80	U	50.80	U	50.80	U
Arsenic	µg/l	2.20	U	5	U	67.90	J
Barium	µg/l	98.30	U	98.90	U	81.10	U
Beryllium	µg/l	0.50	U	0.50	U	0.50	U
Cadmium	µg/l	4.30	U	4.30	U	4.30	U
Calcium	µg/l	141000	U	109000	U	102000	U
Chromium	µg/l	10.10	U	21.10	U	17	U
Cobalt	µg/l	21.10	U	11.80	U	15.50	U
Copper	µg/l	38.30	U	19.20	U	39.40	U
Iron	µg/l	5290	U	11600	U	54300	J
Lead	µg/l	21.30	U	5.50	J	12.60	U
Magnesium	µg/l	16500	U	20100	U	16500	U
Manganese	µg/l	10200	U	1030	U	4750	U
Mercury	µg/l	0.20	U	0.20	U	0.20	U
Nickel	µg/l	38.20	U	24.90	U	22.50	U
Potassium	µg/l	3990	U	3450	U	2550	U
Selenium	µg/l	2.80	U	28	U	2.80	U
Silver	µg/l	3.20	U	3.20	U	3.20	U
Sodium	µg/l	228000	U	60000	U	117000	U
Thallium	µg/l	36	U	36	U	36	U
Vanadium	µg/l	5.40	U	13.20	U	17.40	U
Zinc	µg/l	46	J	37.60	U	44.60	U
<b>TPH by 8015 Modified California Luft</b>							
TPH-Extractable as Diesel	mg/l	1.50	U	0.50	U	4.80	B
TPH-Purgeable as Gasoline	mg/l	1.40	U	0.03	B	9	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V4-MW/3 V4-MW/3  
SAMPLE ID: V4-MW/3-1094 V4-MW/3-1094F  
COLLECTION DATE: 10/26/94 10/26/94  
ASSOCIATED QC: TB-102694-1, ER-102494-1 TB-102694-1, ER-102494-1  
FB-092494-P FB-092494-P

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010					
1,1,1,2-Tetrachloroethane	µg/l	0.35	U	-	-
1,1,1-Trichloroethane	µg/l	0.35	U	-	-
1,1,2,2-Tetrachloroethane	µg/l	0.40	U	-	-
1,1,2-Trichloroethane	µg/l	0.25	U	-	-
1,1-Dichloroethane	µg/l	0.35	U	-	-
1,1-Dichloroethene	µg/l	0.35	U	-	-
1,2,3-Trichloropropane	µg/l	0.35	U	-	-
1,2-Dibromoethane (Ethylene di	µg/l	0.35	U	-	-
1,2-Dichlorobenzene	µg/l	0.30	U	-	-
1,2-Dichloroethane	µg/l	0.25	U	-	-
1,2-Dichloropropane	µg/l	0.30	U	-	-
1,3-Dichlorobenzene	µg/l	0.20	U	-	-
1,4-Dichlorobenzene	µg/l	0.20	U	-	-
2-Chloroethyl vinyl ether	µg/l	0.40	U	-	-
2-Chlorotoluene	µg/l	0.25	U	-	-
4-Chlorotoluene	µg/l	0.35	U	-	-
Bromobenzene	µg/l	0.85	U	-	-
Bromochloromethane	µg/l	0.25	U	-	-
Bromodichloromethane	µg/l	0.40	U	-	-
Bromoform	µg/l	0.50	U	-	-
Bromomethane	µg/l	0.45	U	-	-
Carbon tetrachloride	µg/l	0.35	U	-	-
Chlorobenzene	µg/l	0.35	U	-	-
Chloroethane	µg/l	0.50	U	-	-
Chloroform	µg/l	0.35	U	-	-
Chloromethane	µg/l	0.50	U	-	-
Cis-1,3-Dichloropropene	µg/l	0.30	U	-	-
Dibromochloromethane	µg/l	0.30	U	-	-
Dibromomethane	µg/l	0.40	U	-	-
Methylene chloride	µg/l	1.40	B	-	-
Tetrachloroethene	µg/l	0.30	U	-	-
Trans-1,2-Dichloroethene	µg/l	0.30	U	-	-
Trans-1,3-Dichloropropene	µg/l	0.25	U	-	-
Trichloroethene	µg/l	0.19	U	-	-
Vinyl chloride	µg/l	0.55	U	-	-

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V4-MW3 V4-MW3  
SAMPLE ID: V4-MW3-1094 V4-MW3-1094F  
COLLECTION DATE: 10/26/94 10/26/94  
ASSOCIATED QC: TB-102694-1, ER-102494-1 TB-102694-1, ER-102494-1  
FB-092494-P FB-092494-P

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020					
1,2-Dichlorobenzene	µg/l	0.15	U	-	-
1,3-Dichlorobenzene	µg/l	0.20	U	-	-
1,4-Dichlorobenzene	µg/l	0.15	U	-	-
Benzene	µg/l	0.35	U	-	-
Chlorobenzene	µg/l	0.25	U	-	-
Ethylbenzene	µg/l	0.20	U	-	-
Methyl-tert-butyl ether	µg/l	5	U	-	-
Styrene	µg/l	0.25	U	-	-
Toluene	µg/l	0.23	U	-	-
m + p-Xylene	µg/l	0.50	U	-	-
m-Xylene	µg/l	-	U	-	-
o-Xylene	µg/l	0.20	U	-	-
p-Xylene	µg/l	-	U	-	-
Semivolatile Organic Compounds by CLP 3190					
1,2,4-Trichlorobenzene	µg/l	5	U	-	-
2,2'-Oxybis(1-chloropropane)	µg/l	5	U	-	-
2,4,5-Trichlorophenol	µg/l	20	U	-	-
2,4,6-Trichlorophenol	µg/l	5	U	-	-
2,4-Dichlorophenol	µg/l	5	U	-	-
2,4-Dimethylphenol	µg/l	5	U	-	-
2,4-Dinitrophenol	µg/l	20	U	-	-
2,4-Dinitrotoluene	µg/l	5	U	-	-
2,6-Dinitrotoluene	µg/l	5	U	-	-
2-Chloronaphthalene	µg/l	5	U	-	-
2-Chlorophenol	µg/l	5	U	-	-
2-Methylnaphthalene	µg/l	5	U	-	-
2-Methylphenol	µg/l	5	U	-	-
2-Nitroaniline	µg/l	20	U	-	-
2-Nitrophenol	µg/l	5	U	-	-
3,3'-Dichlorobenzidine	µg/l	5	U	-	-
3-Nitroaniline	µg/l	20	U	-	-
4,6-Dinitro-2-methylphenol	µg/l	20	U	-	-
4-Bromophenyl phenyl ether	µg/l	5	U	-	-
4-Chloro-3-methylphenol	µg/l	5	U	-	-

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V4-MW3 V4-MW3  
SAMPLE ID: V4-MW3-1094 V4-MW3-1094F  
COLLECTION DATE: 10/26/94 10/26/94  
ASSOCIATED QC: TB-102694-1,ER-102494-1 TB-102694-1,ER-102494-1  
FB-092494-P FB-092494-P

CRITERIA	UNITS:		RESULT	QUAL	RESULT	QUAL
	µg/l	µg/l				
4-Chloroaniline	µg/l	5	U	U	-	-
4-Chlorophenyl phenyl ether	µg/l	5	U	U	-	-
4-Methylphenol	µg/l	5	U	U	-	-
4-Nitroaniline	µg/l	20	U	U	-	-
4-Nitrophenol	µg/l	20	U	U	-	-
Acenaphthene	µg/l	5	U	U	-	-
Acenaphthylene	µg/l	5	U	U	-	-
Anthracene	µg/l	5	U	U	-	-
Benzo(a)anthracene	µg/l	5	U	U	-	-
Benzo(a)pyrene	µg/l	5	U	U	-	-
Benzo(b)fluoranthene	µg/l	5	U	U	-	-
Benzo(g,h,i)perylene	µg/l	5	U	U	-	-
Benzo(k)fluoranthene	µg/l	5	U	U	-	-
Butyl benzyl phthalate	µg/l	5	U	U	-	-
Chrysene	µg/l	5	U	U	-	-
Di-n-butyl phthalate	µg/l	5	U	U	-	-
Di-n-octyl phthalate	µg/l	5	U	U	-	-
Dibenzo(a,h)anthracene	µg/l	5	U	U	-	-
Dibenzofuran	µg/l	5	U	U	-	-
Diethyl phthalate	µg/l	5	U	U	-	-
Dimethyl phthalate	µg/l	5	U	U	-	-
Fluoranthene	µg/l	5	U	U	-	-
Fluorene	µg/l	5	U	U	-	-
Hexachlorobenzene	µg/l	5	U	U	-	-
Hexachlorobutadiene	µg/l	5	U	U	-	-
Hexachlorocyclopentadiene	µg/l	5	U	U	-	-
Hexachloroethane	µg/l	5	U	U	-	-
Indeno(1,2,3-cd)pyrene	µg/l	5	U	U	-	-
Isophorone	µg/l	5	U	U	-	-
N-Nitroso-di-n-propylamine	µg/l	5	U	U	-	-
N-Nitrosodiphenylamine(1)	µg/l	5	U	U	-	-
Naphthalene	µg/l	5	U	U	-	-
Nitrobenzene	µg/l	5	U	U	-	-
Pentachlorophenol	µg/l	20	U	U	-	-
Phenanthrene	µg/l	5	U	U	-	-
Phenol	µg/l	5	U	U	-	-

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V4-MW3  
SAMPLE ID: V4-MW3-1094  
COLLECTION DATE: 10/26/94  
ASSOCIATED QC: TB-102694-1, ER-102494-1  
FB-092494-P

CRITERIA	UNITS:		RESULT	QUAL	RESULT	QUAL
	µg/l	µg/l				
Pyrene	µg/l	5	U	-	-	
bis(2-Chloroethoxy)methane	µg/l	5	U	-	-	
bis(2-Chloroethyl)ether	µg/l	5	U	-	-	
bis(2-Ethylhexyl)phthalate	µg/l	5	U	-	-	
TAL Metals by CLP 3/90						
Aluminum	µg/l	11700			86.60	(B)
Antimony	µg/l	50.80	U		50.80	U
Arsenic	µg/l	19.60	J		1.70	U
Barium	µg/l	126	(I)		28.10	(I)
Beryllium	µg/l	0.75	(I)		0.50	U
Cadmium	µg/l	4.30	U		4.30	U
Calcium	µg/l	79500			74500	
Chromium	µg/l	26.50			5.40	U
Cobalt	µg/l	18.80	(I)		11.80	U
Copper	µg/l	55.60			7.60	U
Iron	µg/l	25400			42	(B)
Lead	µg/l	32			2.30	U
Magnesium	µg/l	13000			8040	
Manganese	µg/l	1760			150	
Mercury	µg/l	0.20	U		0.20	U
Nickel	µg/l	53.90			17.30	U
Potassium	µg/l	6370			4280	(I)
Selenium	µg/l	28	U		2.80	U
Silver	µg/l	3.20	U		3.20	UJ
Sodium	µg/l	666750			185000	
Thallium	µg/l	36	U		36	U
Vanadium	µg/l	24.30	(I)		5.40	U
Zinc	µg/l	113			5.20	U
TPH by 8015 Modified California Luft						
TPH-Extractable as Diesel	mg/l	0.50	U	-	-	
TPH-Purgeable as Gasoline	mg/l	0.05	B	-	-	

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V4-D1 V4-D2 V4-D3  
SAMPLE ID: V4-D1-0050 V4-D2-0050 V4-D3-0050  
COLLECTION DATE: 10/28/94 10/28/94 10/28/94  
ASSOCIATED QC: TB-102894-2,ER-102894-2 TB-102894-2,ER-102894-2 TB-102894-2,ER-102894-2  
FB-092494-P FB-092494-P FB-092494-P

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Organic Compounds by 8010									
Halogenated Volatile Organic	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
1,1,1,2-tetrachloroethane	µg/kg	3.30	U	3.20	U	3.90	U	3	U
1,1,1-Trichloroethane	µg/kg	0.73	U	0.71	U	0.87	U	0.66	U
1,1,2,2-Tetrachloroethane	µg/kg	1	U	1	U	1.20	U	0.93	U
1,1,2-Trichloroethane	µg/kg	0.91	U	0.88	U	1.10	U	0.82	U
1,1-Dichloroethane	µg/kg	1	U	1	U	1.20	U	0.93	U
1,1-Dichloroethene	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
1,2,3-Trichloropropane	µg/kg	1.60	U	1.50	U	1.90	U	1.40	U
1,2-Dibromoethane (Ethylene di	µg/kg	1.70	U	1.60	U	2	U	1.50	U
1,2-Dichlorobenzene	µg/kg	0.79	U	0.76	U	0.94	U	0.71	U
1,2-Dichloroethane	µg/kg	0.79	U	0.76	U	0.94	U	0.71	U
1,2-Dichloropropane	µg/kg	2.20	U	2.10	U	2.60	U	2	U
1,3-Dichlorobenzene	µg/kg	2.20	U	2.10	U	2.60	U	2	U
1,4-Dichlorobenzene	µg/kg	1.30	U	1.30	U	1.60	U	1.20	U
2-Chloroethyl vinyl ether	µg/kg	1.20	U	1.20	U	1.40	U	1.10	U
2-Chlorotoluene	µg/kg	1.30	U	1.30	U	1.60	U	1.20	U
4-Chlorotoluene	µg/kg	0.91	U	0.88	U	1.10	U	0.82	U
Bromobenzene	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
Bromochloromethane	µg/kg	1.20	U	1.20	U	1.40	U	1.10	U
Bromodichloromethane	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
Bromoform	µg/kg	3.40	U	3.30	U	4.10	U	3.10	U
Bromomethane	µg/kg	0.79	U	0.76	U	0.94	U	0.71	U
Carbon tetrachloride	µg/kg	2.20	U	2.10	U	2.60	U	2	U
Chlorobenzene	µg/kg	3.20	U	3.10	U	3.80	U	2.90	U
Chloroethane	µg/kg	1.20	U	1.20	U	1.40	U	1.10	U
Chloroform	µg/kg	3	U	2.90	U	3.60	U	2.70	U
Chloromethane	µg/kg	1.20	U	1.10	U	1.40	U	1	U
Cis-1,3-Dichloropropene	µg/kg	0.98	U	0.94	U	1.20	U	0.88	U
Dibromochloromethane	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
Dibromomethane	µg/kg	3.50	(B)	1.80	(B)	67	U	8.40	B
Methylene chloride	µg/kg	0.98	U	0.94	U	1.20	U	0.88	U
Tetrachloroethene	µg/kg	1.30	U	1.30	U	1.60	U	1.20	U
Trans-1,2-Dichloroethene	µg/kg	1	U	1	U	1.20	U	0.93	U
Trans-1,3-Dichloropropene	µg/kg	0.98	U	0.94	U	1.20	U	0.88	U
Trichloroethene	µg/kg	3.20	U	3.10	U	3.80	U	2.90	U
Vinyl chloride	µg/kg								

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4  
Vermont Air National Guard Base

LOCATOR:		V4-D1	V4-D1	V4-D1	V4-D2	V4-D3
SAMPLE ID:		V4-D1-0050	V4-D1-0050D	V4-D2-0050	V4-D3-0050	
COLLECTION DATE:		10/28/94	10/28/94	10/28/94	10/28/94	
ASSOCIATED QC:	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P	
CRITERIA UNITS:						
Aromatic Volatile Organic Compounds by 8020						
1,2-Dichlorobenzene	µg/kg	1.70	U	1.60	U	0.22 (B)
1,3-Dichlorobenzene	µg/kg	1.30	U	1.30	U	1.20 U
1,4-Dichlorobenzene	µg/kg	1.70	U	1.60	U	1.50 U
Benzene	µg/kg	1.70	U	1.60	U	1.50 U
Chlorobenzene	µg/kg	1.10	U	1.10	U	0.99 U
Ethylbenzene	µg/kg	2.20	U	2.10	U	0.24 (B)
Methyl-tert-butyl ether	µg/kg	13	U	13	U	12 U
Styrene	µg/kg	1.80	U	1.80	U	1.60 U
Toluene	µg/kg	6.50	U	6.20	U	0.24 (B)
m + p-Xylene	µg/kg	3.90	U	3.80	U	-
m-Xylene	µg/kg	-	U	-	U	0.03 (B)
o-Xylene	µg/kg	1.50	U	1.40	U	1.30 U
p-Xylene	µg/kg	-	U	-	U	0.03 (B)
Semivolatile Organic Compounds by CLP 3/90						
1,2,4-Trichlorobenzene	µg/kg	4000	U	3800	U	360 U
1,2-Dichlorobenzene	µg/kg	4000	U	3800	U	360 U
1,3-Dichlorobenzene	µg/kg	4000	U	3800	U	360 U
1,4-Dichlorobenzene	µg/kg	4000	U	3800	U	360 U
2,2'-Oxybis(1-chloropropane)	µg/kg	4000	U	3800	U	360 U
2,4,5-Trichlorophenol	µg/kg	9700	U	9300	U	870 U
2,4,6-Trichlorophenol	µg/kg	4000	U	3800	U	360 U
2,4-Dichlorophenol	µg/kg	4000	U	3800	U	360 U
2,4-Dimethylphenol	µg/kg	4000	U	3800	U	360 U
2,4-Dinitrophenol	µg/kg	9700	U	9300	U	870 U
2,4-Dinitrotoluene	µg/kg	4000	U	3800	U	360 U
2,6-Dinitrotoluene	µg/kg	4000	U	3800	U	360 U
2-Chloronaphthalene	µg/kg	4000	U	3800	U	360 U
2-Chlorophenol	µg/kg	4000	U	3800	U	360 U
2-Methylnaphthalene	µg/kg	4000	U	3800	U	360 U
2-Methylphenol	µg/kg	4000	U	3800	U	360 U
2-Nitroaniline	µg/kg	9700	U	9300	U	870 U
2-Nitrophenol	µg/kg	4000	U	3800	U	360 U
3,3'-Dichlorobenzidine	µg/kg	4000	U	3800	U	360 U
3-Nitroaniline	µg/kg	9700	U	9300	U	870 U



**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR:	V4-D1	V4-D1	V4-D1	V4-D2	V4-D3
SAMPLE ID:	V4-D1-0050	V4-D1-0050D	V4-D2-0050	V4-D3-0050	
COLLECTION DATE:	10/28/94	10/28/94	10/28/94	10/28/94	
ASSOCIATED QC:	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P	

CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	9700	U	9300	5800	U
4-Bromophenyl phenyl ether	µg/kg	4000	U	3800	2400	U
4-Chloro-3-methylphenol	µg/kg	4000	U	3800	2400	U
4-Chloroaniline	µg/kg	4000	U	3800	2400	U
4-Chlorophenyl phenyl ether	µg/kg	4000	U	3800	2400	U
4-Methylphenol	µg/kg	4000	U	3800	2400	U
4-Nitroaniline	µg/kg	9700	U	9300	5800	U
4-Nitrophenol	µg/kg	9700	U	9300	5800	U
Acenaphthene	µg/kg	4000	U	3800	3500	U
Acenaphthylene	µg/kg	4000	U	3800	2400	U
Anthracene	µg/kg	4000	U	3800	2500	U
Benzo(a)anthracene	µg/kg	4000	U	3800	5300	U
Benzo(a)pyrene	µg/kg	4000	U	3800	4500	U
Benzo(b)fluoranthene	µg/kg	4000	U	3800	7000	U
Benzo(g,h,i)perylene	µg/kg	4000	U	3800	2800	U
Benzo(k)fluoranthene	µg/kg	4000	U	3800	7500	U
Butyl benzyl phthalate	µg/kg	4000	U	400	600	U
Carbazole	µg/kg	4000	U	3800	1900	U
Chrysene	µg/kg	4000	U	3800	5300	U
Di-n-butyl phthalate	µg/kg	4000	U	3800	2400	U
Di-n-octyl phthalate	µg/kg	4000	U	430	2400	U
Dibenz(a,h)anthracene	µg/kg	4000	U	3800	880	U
Dibenzofuran	µg/kg	4000	U	3800	1800	U
Diethyl phthalate	µg/kg	4000	U	3800	2400	U
Dimethyl phthalate	µg/kg	4000	U	3800	2400	U
Fluoranthene	µg/kg	4000	U	3800	14000	U
Fluorene	µg/kg	4000	U	3800	2700	U
Hexachlorobenzene	µg/kg	4000	U	3800	2400	U
Hexachlorobutadiene	µg/kg	4000	U	3800	2400	U
Hexachlorocyclopentadiene	µg/kg	4000	U	3800	2400	U
Hexachloroethane	µg/kg	4000	U	3800	2400	U
Indeno(1,2,3-cd)pyrene	µg/kg	4000	U	3800	2900	U
Isophorone	µg/kg	4000	U	3800	2400	U
N-Nitroso-di-n-propylamine	µg/kg	4000	U	3800	2400	U
N-Nitrosodiphenylamine(1)	µg/kg	4000	U	3800	2400	U
Naphthalene	µg/kg	4000	U	3800	630	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V4-D1 V4-D2 V4-D3  
 SAMPLE ID: V4-D1-0050 V4-D2-0050 V4-D3-0050  
 COLLECTION DATE: 10/28/94 10/28/94 10/28/94  
 ASSOCIATED QC: TB-102894-2, ER-102894-2 TB-102894-2, ER-102894-2 TB-102894-2, ER-102894-2  
 FB-092494-P FB-092494-P FB-092494-P

CRITERIA UNITS:	V4-D1		V4-D2		V4-D3	
	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Nitrobenzene	4000	U	3800	U	2400	U
Pentachlorophenol	9700	U	9300	U	5800	U
Phenanthrene	4000	U	3800	U	16000	U
Phenol	4000	U	3800	U	2400	U
Pyrene	4000	U	3800	U	11000	U
bis(2-Chloroethoxy)methane	4000	U	3800	U	2400	U
bis(2-Chloroethyl)ether	4000	U	3800	U	2400	U
bis(2-Ethylhexyl)phthalate	4000	U	3800	U	1100	U
TAL Metals by CLP 3/90						
Aluminum	4680	U	6010	U	8130	U
Antimony	9.40	U	9.10	U	11.30	U
Arsenic	0	U	0	U	0	U
Barium	22.70	U	26.20	U	54	U
Beryllium	0.39	U	0.37	U	0.49	U
Cadmium	1.50	U	1.90	U	3.80	U
Calcium	1390	U	3410	U	8560	U
Chromium	48.30	U	49.70	U	37.70	U
Cobalt	6	U	4.20	U	12.40	U
Copper	22.60	U	24.20	U	33.40	U
Iron	10700	U	12500	U	16500	U
Lead	84.20	U	126	U	113	U
Magnesium	2920	U	4090	U	3010	U
Manganese	157	U	131	U	607	U
Mercury	0.12	U	0.12	U	0.17	U
Nickel	21	U	10.60	U	21.70	U
Potassium	514	U	497	U	758	U
Selenium	0.68	U	0.64	U	0.81	U
Silver	1.50	U	1	U	1.40	U
Sodium	119	U	104	U	110	U
Thallium	0.88	U	0.82	U	1	U
Vanadium	11	U	12.30	U	16.80	U
Zinc	153	U	170	U	400	U
TPH by 8015 Modified California Luft						
TPH-Extractable as Diesel	240	U	57	U	240	U
TPH-Purgeable as Gasoline	0.03	U	0.05	U	0.05	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V4-SW3 V4-SW3  
SAMPLE ID: V4-SW3-1094 V4-SW3-1094D  
COLLECTION DATE: 10/28/94 10/28/94  
ASSOCIATED QC: TB-102894-2,ER-102894-1 TB-102894-2,ER-102894-1  
FB-092494-P FB-092494-P

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL
Organic Compounds by 8010					
Halogenated Volatile Organic	µg/l	0.35	U	0.35	U
1,1,1,2-Tetrachloroethane	µg/l	0.35	U	0.35	U
1,1,1-Trichloroethane	µg/l	0.40	U	0.40	U
1,1,2,2-Tetrachloroethane	µg/l	0.25	U	0.25	U
1,1,2-Trichloroethane	µg/l	0.35	U	0.35	U
1,1-Dichloroethane	µg/l	0.35	U	0.35	U
1,1-Dichloroethane	µg/l	0.35	U	0.35	U
1,2,3-Trichloropropane	µg/l	0.35	U	0.35	U
1,2-Dibromoethane (Ethylene di	µg/l	0.35	U	0.35	U
1,2-Dichlorobenzene	µg/l	0.30	U	0.30	U
1,2-Dichloroethane	µg/l	0.25	U	0.25	U
1,2-Dichloropropane	µg/l	0.30	U	0.30	U
1,3-Dichlorobenzene	µg/l	0.20	U	0.20	U
1,4-Dichlorobenzene	µg/l	0.40	U	0.40	U
2-Chloroethyl vinyl ether	µg/l	0.25	U	0.25	U
2-Chlorotoluene	µg/l	0.35	U	0.35	U
4-Chlorotoluene	µg/l	0.85	U	0.85	U
Bromobenzene	µg/l	0.25	U	0.25	U
Bromochloromethane	µg/l	0.40	U	0.40	U
Bromodichloromethane	µg/l	0.50	U	0.50	U
Bromoform	µg/l	0.45	U	0.45	U
Bromomethane	µg/l	0.35	U	0.35	U
Carbon tetrachloride	µg/l	0.35	U	0.35	U
Chlorobenzene	µg/l	0.50	U	0.50	U
Chloroethane	µg/l	0.35	U	0.35	U
Chloroform	µg/l	0.50	U	0.50	U
Chloromethane	µg/l	0.30	U	0.30	U
Cis-1,3-Dichloropropene	µg/l	0.30	U	0.30	U
Dibromochloromethane	µg/l	0.40	U	0.40	U
Dibromomethane	µg/l	1.40	B	1.60	B
Methylene chloride	µg/l	0.30	U	0.30	U
Tetrachloroethene	µg/l	0.30	U	0.30	U
Trans-1,2-Dichloroethane	µg/l	0.25	U	0.25	U
Trans-1,3-Dichloropropene	µg/l	0.30	U	0.30	U
Trichloroethene	µg/l	0.55	U	0.55	U
Vinyl chloride	µg/l				

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4  
Vermont Air National Guard Base

LOCATOR: V4-SW3 V4-SW3  
SAMPLE ID: V4-SW3-1094 V4-SW3-1094D  
COLLECTION DATE: 10/28/94 10/28/94  
ASSOCIATED QC: TB-102894-2,ER-102894-1 TB-102894-2,ER-102894-1  
FB-092494-P FB-092494-P

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020					
1,2-Dichlorobenzene	µg/l	0.35	J	0.30	B
1,3-Dichlorobenzene	µg/l	0.34	J	0.53	
1,4-Dichlorobenzene	µg/l	0.15	UJ	0.33	B
Benzene	µg/l	0.35	UJ	0.35	U
Chlorobenzene	µg/l	0.25	UJ	0.25	U
Ethylbenzene	µg/l	0.20	UJ	0.20	U
Methyl-tert-butyl ether	µg/l	5	UJ	5	U
Styrene	µg/l	0.25	UJ	0.25	U
Toluene	µg/l	0.30	B	0.24	(B)
m + p-Xylene	µg/l	0.50	UJ	0.50	U
o-Xylene	µg/l	0.20	UJ	0.20	U
Semivolatile Organic Compounds by CLP 3/90					
1,2,4-Trichlorobenzene	µg/l	5	U	5	U
2,2'-Oxybis(1-chloropropane)	µg/l	5	U	5	U
2,4,5-Trichlorophenol	µg/l	20	U	20	U
2,4,6-Trichlorophenol	µg/l	5	U	5	U
2,4-Dichlorophenol	µg/l	5	U	5	U
2,4-Dimethylphenol	µg/l	5	U	5	U
2,4-Dinitrophenol	µg/l	20	U	20	U
2,4-Dinitrotoluene	µg/l	5	U	5	U
2,6-Dinitrotoluene	µg/l	5	U	5	U
2-Chloronaphthalene	µg/l	5	U	5	U
2-Chlorophenol	µg/l	5	U	5	U
2-Methylnaphthalene	µg/l	5	U	5	U
2-Methylphenol	µg/l	5	U	5	U
2-Nitroaniline	µg/l	20	U	20	U
2-Nitrophenol	µg/l	5	U	5	U
3,3'-Dichlorobenzidine	µg/l	5	U	5	U
3-Nitroaniline	µg/l	20	U	20	U
4,6-Dinitro-2-methylphenol	µg/l	20	U	20	U
4-Bromophenyl phenyl ether	µg/l	5	U	5	U
4-Chloro-3-methylphenol	µg/l	5	U	5	U
4-Chloroaniline	µg/l	5	U	5	U
4-Chlorophenyl phenyl ether	µg/l	5	U	5	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V4-SW3 V4-SW3  
SAMPLE ID: V4-SW3-1094 V4-SW3-1094D  
COLLECTION DATE: 10/28/94 10/28/94  
ASSOCIATED QC: TB-102894-2, ER-102894-1 TB-102894-2, ER-102894-1  
FB-092494-P FB-092494-P

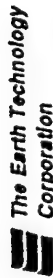
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL
4-Methylphenol	µg/l	5	U	5	U
4-Nitroaniline	µg/l	20	U	20	U
4-Nitrophenol	µg/l	20	U	20	U
Acenaphthene	µg/l	5	U	5	U
Acenaphthylene	µg/l	5	U	5	U
Anthracene	µg/l	5	U	5	U
Benzo(a)anthracene	µg/l	5	U	5	U
Benzo(a)pyrene	µg/l	5	U	5	U
Benzo(b)fluoranthene	µg/l	5	U	5	U
Benzo(g,h,i)perylene	µg/l	5	U	5	U
Benzo(k)fluoranthene	µg/l	5	U	5	U
Butyl benzyl phthalate	µg/l	5	U	5	U
Chrysene	µg/l	5	U	5	U
Di-n-butyl phthalate	µg/l	0.60	(J)	5	U
Di-n-octyl phthalate	µg/l	5	U	5	U
Dibenzo(a,h)anthracene	µg/l	5	U	5	U
Dibenzofuran	µg/l	5	U	5	U
Diethyl phthalate	µg/l	5	U	5	U
Dimethyl phthalate	µg/l	5	U	5	U
Fluoranthene	µg/l	5	U	5	U
Fluorene	µg/l	5	U	5	U
Hexachlorobenzene	µg/l	5	U	5	U
Hexachlorobutadiene	µg/l	5	U	5	U
Hexachlorocyclopentadiene	µg/l	5	U	5	U
Hexachloroethane	µg/l	5	U	5	U
Indeno(1,2,3-cd)pyrene	µg/l	5	U	5	U
Isophorone	µg/l	5	U	5	U
N-Nitroso-di-n-propylamine	µg/l	5	U	5	U
N-Nitrosodiphenylamine(1)	µg/l	5	U	5	U
Naphthalene	µg/l	5	U	5	U
Nitrobenzene	µg/l	5	U	5	U
Pentachlorophenol	µg/l	20	U	20	U
Phenanthrene	µg/l	5	U	5	U
Phenol	µg/l	0.60	(J)	5	U
Pyrene	µg/l	5	U	5	U
bis(2-Chloroethoxy)methane	µg/l	5	U	5	U

**TABLE J-1 LABORATORY ANALYTICAL DATA**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

LOCATOR: V4-SW3 V4-SW3  
SAMPLE ID: V4-SW3-1094 V4-SW3-1094D  
COLLECTION DATE: 10/28/94 10/28/94  
ASSOCIATED QC: TB-102894-2.ER-102894-1 TB-102894-2.ER-102894-1  
FB-092494-P FB-092494-P

CRITERIA	UNITS	RESULT		QUAL		RESULT		QUAL	
		µg/l	5	U		µg/l	8	U	
bis(2-Chloroethyl)ether	µg/l								
bis(2-Ethylhexyl)phthalate	µg/l		7						
TAL Metals by CLP 3/90									
Aluminum	µg/l	156				144			
Antimony	µg/l	50.80	U			50.80	U		
Arsenic	µg/l	2.40	(J)			1.90	(J)		
Barium	µg/l	18.70	(J)			18	(J)		
Beryllium	µg/l	0.50	U			0.50	U		
Cadmium	µg/l	4.30	U			4.30	U		
Calcium	µg/l	18900				18300			
Chromium	µg/l	5.40	U			5.40	U		
Cobalt	µg/l	11.80	U			11.80	U		
Copper	µg/l	11.50	(J)			10.40	(J)		
Iron	µg/l	1320				1200			
Lead	µg/l	11				9.70			
Magnesium	µg/l	1530	(B)			1480	(J)		
Manganese	µg/l	121				116			
Mercury	µg/l	0.20	U			0.20	U		
Nickel	µg/l	17.30	U			17.30	U		
Potassium	µg/l	6650				6420			
Selenium	µg/l	2.80	U			2.80	U		
Silver	µg/l	3.20	U			3.20	U		
Sodium	µg/l	15000				14600			
Thallium	µg/l	36	U			36	U		
Vanadium	µg/l	5.40	U			5.40	U		
Zinc	µg/l	2470	J			2350	J		

TPH by 8015 Modified California Luft									
TPH-Extractable as Diesel	mg/l	12				16			J
TPH-Purgeable as Gasoline	mg/l	0.43	(J)			0.50			



The Earth Technology Corporation

Laboratory CompuChem Labs Inc  
Address 3308 Chapel Hill/Nelson  
Hwy Research Triangle Park  
N.C. 27709

Client Earth Tech  
Address 683 Ewing Valley Pkwy  
Oak Ridge TN 37830

Project Name / Number VTANG 731802-08

Contract / Purchase Order / Quote N/A

## Chain of Custody Record

Method of Shipment Federal Express priority overnight

Airbill No. 2394277082

Shipment No. #1

Cooler No. #1

Project Manager G. Maynor

Telephone No. 802-264-3368

Fax No. AS above

Samplers: (Signature) [Signature]

Field Sample Number	Location / Depth	Date	Time	Sample Type	Type/Size of Container	Temp.	Preservation	Analysis Required	Remarks
V4-B6-1921	Site 4	9/7/94	1355	Soil	6-in ch. stainless steel liner	4°C	N/A	2	
V4-B6-2426	"	9/7/94	1408	Soil	"	"	"	2	
V4-B3-1410	"	"	1512	"	"	"	"	2	
V4-B3-1921	"	"	1519	"	"	"	"	2	
V4-B2-1416	"	"	1642	"	"	"	"	2	
V4-B2-1921	"	"	1655	"	"	"	"	2	
TB-090794-1	VTANG Site 4	9/7/94	1200	LAB water	40 mL. clear vial	"	HCL	2	
								14	Total

Relinquished by: [Signature] Date 9/7/94

Signature [Signature] Date 9/7/94

Printed [Signature] Time 1900

Company Earth Tech

Reason Fed Ex to Lab

Comments: Air Bill NO. 2394277082

Received by: [Signature] Date 9/7/94

Signature [Signature] Date 9/7/94

Printed [Signature] Time 1900

Company Earth Tech

Reason Fed Ex to Lab

Comments: Air Bill NO. 2394277082

















Laboratory Compuchem Lab  
Address 3308 Chapel Hill/Nelson  
Highway Research Triangle  
Park, NC 27709

Client Earth Tech  
Address 683 Emory Valley Rd  
Oak Ridge TN 37830  
Project Name/Number VTAG-931802-08

Contract / Purchase Order / Quote

### Chain of Custody Record

Method of Shipment fed ex  
Airbill No. 2185281486  
Shipment No. 1-9113/94  
Cooler No. 1-9113/94  
Project Manager G. Mayner  
Telephone No. 615-482-9401  
Fax No. 615-481-3834  
Samplers: (Signature)

COC \*V-091394-1

Lab Job no. 0913/94  
Date 09/13/94  
Page 1 of 2

Field Sample Number	Location Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Chemical	Remarks
TB-091394-1	VTAG-931802-08	0700		WTR	40ml. c.l.g.	4°C	HCL	2
V3-B5-0305	Site 3 SB-5	0807		SOIL	6 inch steel stove	4°C	NONE	2 1 1
V3-B5-0305	"	0833		"	"	"	"	2 1 1
V3-B2-0305	Site 3 SB-2	0920		"	"	3" B	"	2 1 1
V3-B2-1113	"	0939		"	"	"	"	2 1 1
V3-B3-0305	Site 3 SB-3	1315		"	"	"	"	2 1 1
V3-B3-1315	"	1337		"	"	"	"	2 1 1
V3-B1-0305	Site 3 SB-1	1032		"	"	"	"	2 1 1
V3-B1-1113	"	1121		"	"	"	"	3 1 2
V3-B1-1113-D	"	1121		"	"	"	"	2 1 1
V3-B4-0305	Site 3 SB-4	1459		"	"	"	"	2 1 1
V3-B4-0810	"	1507		"	"	"	"	3 1 2

Relinquished by:	Received by:	Relinquished by:	Received by:
Signature _____	Signature _____	Signature _____	Signature _____
Printed _____	Printed _____	Printed _____	Printed _____
Company _____	Company _____	Company _____	Company _____
Reason _____	Reason _____	Reason _____	Reason _____

Relinquished by:	Received by:	Relinquished by:	Received by:
Signature _____	Signature _____	Signature _____	Signature _____
Printed _____	Printed _____	Printed _____	Printed _____
Company _____	Company _____	Company _____	Company _____
Reason _____	Reason _____	Reason _____	Reason _____

Comments: \* sample marked ends of sleeves where indicated.  
Note most soils are dirty w/JP8 fuel. watch VOCs 8010/8020



The Earth Technology Corporation

Laboratory Campanchem Lab

Address 3308 Chapel Hill/Nelson Highway, Research Triangle Park, NC 27709

Client Earth Tech

Address 6083 Emory Valley Rd Oak Ridge, TN 37830

Project Name/Number 931802-08

Contract / Purchase Order / Quote                     

Method of Shipment Fed Ex

Airbill No. 2185281486

Shipment No. 1-913/94

Cooler No. 1-913/94

Project Manager G. Moynor

Telephone No. 615-483-9904

Fax No. 615-481-3834

Sample(s) (Signature) Greg Moynor

Chain of Custody Record

Lab job no. 913/94

Date 9/13/94

Page 2 of 2

Field Sample Number

Location Depth

Date

Time

Sample Type

Size of Container

Preservation Temp.

Chemical

Remarks

Received by:

Signature

Printed

Company

Date

Time

Received by:

Signature

Printed

Company

Date

Time

Comments: \* Sample marked ends of sleeves where indicated.

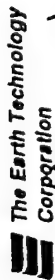
→ Note: Most soils are dirty w/ JP-8

Fuel watch VOCs 8010/8020

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000 3/25/92





Laboratory Samuel Chem Labs Inc  
Address 3308 Chapel Hill/Nelson  
Hwy - Research Triangle  
Park NC 27709

Client Earth Tech  
Address 683 Emory Valley RD  
Oak Ridge TN 37830

Project Name / Number VTANG 931802-08/19

Contract / Purchase Order / Quote

## Chain of Custody Record

Method of Shipment Federal Express

Albill No. 2185281512

Shipment No. 1

Cooler No. 1

Project Manager Breag Maynard

Telephone No. 615 483 404

Fax No. 615 481 3834

Samplers: Patricia H. Long  
(Signature)

Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Chemical
V4-B5-0406	Site 4	9/14/94	0932	Soil	6" Stainless	4°C	none
V4-B5-0911	Site 4	9/14/94	0943	Soil	6" Stainless	4°C	none
V4-B5-1719	Site 4	9/14/94	0953	Soil	6" Stainless	4°C	none
TB-091494-1	Site 4	9/14/94	0700	Water	40mL	4°C	HCL

No. of Containers	Analyte Required	Remarks
2	VOCs, SVOCs, Metals	
2	VOCs, SVOCs, Metals	
2	VOCs, SVOCs, Metals	
2	VOCs, SVOCs, Metals	

Relinquished by: Signature <u>Patricia H. Long</u> Printed <u>PATRICIA H LONG</u> Company <u>Earth Tech</u> Reason <u>Shipment</u>	Received by: Signature _____ Printed _____ Company _____ Reason _____	Date <u>9/14/94</u> Time <u>1930</u>	Date _____ Time _____
Comments: <u>Note: These are the last samples to be sent for this 1st Sampling Event. Sampling will Resume on 0920-94 &amp; samples will be sent for delivery on 0921-94 at 9:14/94</u>		Relinquished by: Signature _____ Printed _____ Company _____ Reason _____	
Relinquished by: Signature _____ Printed _____ Company _____ Reason _____		Received by: Signature _____ Printed _____ Company _____ Reason _____	
Date _____ Time _____		Date _____ Time _____	









Laboratory Compendium Lab Inc  
Address 3308 Chapel Hill / Nelsm  
High Research Triangle Park  
NC 27709

Client Earth Tech  
Address 683 Emory Valley Rd.  
Oak Ridge TN 37830

Project Name / Number G31802-10/VTANG

Contract / Purchase Order / Quote

## Chain of Custody Record

Method of Shipment Fed Express

Airbill No. 2185281490

Shipment No. 2

Cooler No. 2

Project Manager Greg Maynor

Telephone No. 615 483 4404

Fax No. 615 483 481 3834

Samplers: (Signature) Robert H. Gays

Preservation

Temp. Chemical

Sample Type

Type/Size of Container

Field Sample Number

Location Depth

Date

Time

FB-092194-1

ER-092194-1

Water

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Relinquished by: Robert H. Gays

Signature

Printed

Company

Reason

Comments:

Received by:

Signature

Printed

Company

Date

Time

2000

Relinquished by:

Signature

Printed

Company

Date

Time

2000

Received by:

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Received by:

Signature

Printed

Company

Date

Time

2000



The Earth Technology Corporation

Laboratory Conduction Labs Inc  
Address 3308 Chapel Hill / Nicksan  
Way Research Triangle Park  
NC 27709

Client Earth Tech  
Address 1083 Emory Valley Rd  
Oak Ridge TN 37830

Project Name / Number VTANG/931802-10

Contract / Purchase Order / Quote

Lab job no.: COL#V-092294-1

Chain of Custody Record

Method of Shipment Fed Express

Airbill No. 2185446093

Shipment No. 1

Cooler No. 1

Project Manager Greg Magner

Telephone No. 615 483 7104

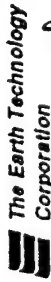
Fax No. 615 481 3834

Samplers: (Signature) [Signature]

Field Sample Number	Location / Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Chemical	No. of Containers	Analysis Required	Remarks
V1-B13-0305	Site 1 3-5'	9/22/94	1008	Soil	6" Standees	4°C	NONE	2		
V1-B13-0810	Site 1 8-10'	9/22/94	1618	Soil	6" Standees	4°C	NONE	2		
V1-B14-0305	Site 1 3-5'	9/22/94	1516	Soil	6" Standees	4°C	NONE	2		
V1-B14-0709	Site 1 7-9'	9/22/94	1556	Soil	6" Standees	4°C	NONE	2		
TB-092294-1	Site 1	9/22/94	1008	Water	40 mL VOA	4°C	HCL	2		
TOTAL								10		

Relinquished by: <u>[Signature]</u> Signature Printed <u>J. D. Vollen</u> Company <u>Earth Tech</u> Reason <u>Shipper</u>	Received by: Signature Printed Company	Date 9/22/94 Time 1230 PM 0730 PM
Relinquished by: Signature Printed Company	Received by: Signature Printed Company	Date Time
Relinquished by: Signature Printed Company	Received by: Signature Printed Company	Date Time
Relinquished by: Signature Printed Company	Received by: Signature Printed Company	Date Time





The Earth Technology Corporation

Laboratory Longueville Labs Inc

Address 3308 Chapel Hill / Apt 150

Howe Research Triangle

Rand NC 27709

Client Earth Tech

Address 683 Emory Valley Rd.

DAL Ridge TN

Project Name / Number VTAN 6 - 931802-0810

Contract / Purchase Order / Quote

Method of Shipment Federal Express

Airbill No. 2185445975

Shipment No.

Cooler No. 1

Project Manager Greg Hapner

Telephone No. 615-483-5400

Telefax No. 615-483-3834

Samplers: (Signature) [Signature]

Preservation Temp. Chemical

Type/Size of Container

Sample Type

Date

Time

Location

Field Sample Number

VI-BIS-0204

VI-BIS-0106

VI-BIG-0305

VI-BIG-0305D

VI-BIG-1315

TB-092594-1

ER-092694-1

Total

23

40C Sealed

" "

40C "

40C "

40C "

40C "

40C Sealed

40C Sealed

40C Sealed

40C Sealed

40C Sealed

40C Sealed

40C Sealed

40C Sealed

Lab job no.:

Date 9/26/94

Page 1 of 1

Remarks

Sample contained in VI-BIG-0305-1089 Single

Signature

Printed

Company

Received by:

Signature

Printed

Company

Date

Time

Date

Time

Date

Time

Date

Time

Date

Time

Date

Time

Date

Time

Date

Time

Date

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Time

Date

Time

Date

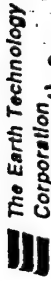
Time

Date

Time

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000 3/25/92



# Chain of Custody Record

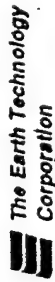
Lab Job no. 1  
Date 7/27/94  
Page 1 of 1

The Earth Technology Corporation  
Laboratory  
The H.C. Nutting Co.  
Address Corporate Center - 4120 Airport  
Road Cincinnati, Ohio 45226  
ATTN: Bob Korte  
Client: Earth Tech  
Address 6836 Memory Valley Rd  
Oak Ridge, TN 37830  
Project Name / Number: 931802-10 VTAN6  
Contract / Purchase Order / Quote: 43 897785C  
Method of Shipment: Fed Express  
Airbill No. 2185446882  
Shipment No. 1  
Box # 1  
Project Manager: Greg Mynior  
Telephone No. 615 483 9404  
Fax No. 615 481 3834  
Samples: (Signature) [Signature]

Analysis Required		Remarks	
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
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27	27	27	27
28	28	28	28
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90	90	90	90
91	91	91	91
92	92	92	92
93	93	93	93
94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

Field Sample Number	Location	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Chemical
V1-BR4-S153	Site 1	7/27/94	1300	Soil	2.5' Shelby	Room	none
V1-MW7E 3537	Site 1	7/27/94	1530	Soil	"	"	"
V1-B16-3032	Site 1	7/27/94	1300	Soil	"	"	"
V1-B16-14515	Site 1	7/27/94	1120	Soil	C" Shanks	"	"
TOTAL							4

Relinquished by: Signature: [Signature] Printed: [Name] Company: Earth Tech Reason: Shipment	Received by: Date: 7/27/94 Signature: [Signature] Printed: [Name] Company: [Company]	Relinquished by: Date: [Date] Signature: [Signature] Printed: [Name] Company: [Company] Reason: [Reason]	Received by: Date: [Date] Signature: [Signature] Printed: [Name] Company: [Company]
Comments:			



# Chain of Custody Record

Laboratory Compuchem Labs Inc  
Address 3308 Chapel Hill/Nelson  
High - Research Triangle  
Pack, NC 27706

Client Earth Tech  
Address 483 Emory Valley Rd  
Oak Ridge TN 37830  
Project Name / Number WANG 931802-10

Contract / Purchase Order / Quote

Method of Shipment Express

Airbill No. 218 544 5986

Shipment No.

Cooler No. 1

Project Manager Greg Mayhew

Telephone No. 615 483 7407

Fax No. 615 481 3834

Samplers: (Signature) [Signature]

Lab job no.

Date 9/28/94

Page 1 of 1

Field Sample Number	Location	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Chemical	No. of Containers	Analyte Required	Remarks
V1-BR4-0400	SIL	9/27/94	0815	Soil	6" Stainless	4°C	none	2	1	
V1-BR4-1416	SIL	9/27/94	0855	Soil	6" Stainless	4°C	none	2	1	
TB-092794-1	SIL	9/27/94	0900	Water	40 mL Vial	4°C	ML	2	2	
TOTAL = 6										

Relinquished by: Signature <u>[Signature]</u> Printed <u>T. Pennington</u> Company <u>Earth Tech</u> Reason <u>Shipment</u>	Date Date <u>9/28</u> Time <u>9:41</u> Time <u>2000</u>	Received by: Signature _____ Printed _____ Company _____	Date Date _____ Time _____
Comments: _____		Received by: Signature <u>[Signature]</u> Printed _____ Company _____	Date Date _____ Time _____





Laboratory Computer Labs Inc  
Address 3308 Chapel Hill / Nelson  
Hwy - Research Triangle  
Raleigh NC 27709  
Client Earth Tech  
Address 6083 Emory Valley Rd  
Oak Ridge TN 37830  
Project Name / Number TANS - 931802-10

Contract / Purchase Order / Quote

**Samplers: (Signature)** Patricia H. [Signature]

[illegible]

COE # V-092394-2  
Chain of Custody Record

Lab job no. 1 \_\_\_\_\_  
Date 9/25/94 \_\_\_\_\_  
Page 1 of 1 \_\_\_\_\_

Method of Shipment Fed Express  
Airbill No. 2185445986  
Shipment No. 2  
Cooler No. 2  
Project Manager Bryce Maynor  
Telephone No. 615 483 9404  
Fax No. 615 481 3834

**Samplers: (Signature)** Patricia H. [Signature]

Relinquished by: Signature <u>F. W. Vulliam</u> Printed <u>F. W. Vulliam</u> Company <u>Earth Tech</u> Reason <u>Shipments</u>		Date <u>9/28</u> <u>9/29</u> Time <u>2000</u>	Received by: Signature _____ Printed _____ Company _____	Date _____ Time _____
Relinquished by: Signature _____ Printed _____ Company _____ Reason _____		Date _____ Time _____	Received by: Signature _____ Printed _____ Company _____	Date _____ Time _____
Comments: * Please <del>return</del> <u>polyester</u> samples from marked ends of spexes - marked w/ an "X". PHL 9/28/94				

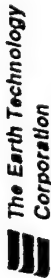
175,100  
F-1000

**CONTRIBUTION:** While in Laboratory Canary to Earth Technology Project File, Pink to Courler, Golden to Field File









The Earth Technology Corporation

Laboratory Compuchem Lab, Inc.

Address 3308 Chapel Hill

Nelson Hwy, Research

Triangle PK, NC 27709

Client Earth Tech

Address 6083 Emory Valley Rd

Oak Ridge TN 37830

Project Name / Number 931802-08

Contract / Purchase Order / Quote ---

Samplers: (Signature)

Method of Shipment Fed Ex

Airbill No. 2185446076

Shipment No. V-102494-21

Cooler No. # 2

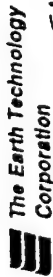
Project Manager Greg Maynor

Telephone No. 615-483-9404

Fax No. 615-481-3834

Field Sample Number	Location / Depth	Date	Time	Sample Type	Type / Size of Container	Temp.	Observation	Chemical
V3-BG1-1094	Site 3	10/24/94	1315	GW	see analysis	4°C	see analysis	No
V3-BG1-1094-D	"	"	1315	"	"	"	"	"
V3-BG1-1094-F	"	"	1315	"	"	"	"	"
V3-BG1-1094-DF	"	"	1315	"	"	"	"	"
TB-102494-2	"	"	1300	LAB	"	"	"	"
Total 24								

Relinquished by: Signature <u>Greg Maynor</u> Printed <u>Greg Maynor</u> Company <u>Earth Tech</u> Reason <u>Lab</u>	Date <u>10/24/94</u> Time <u>1315</u>	Received by: Signature <u>(Signature)</u> Printed <u>(Printed)</u> Company <u>(Company)</u>	Date <u>10/24/94</u> Time <u>(Time)</u>
Comments: <u>F = Filtered</u> <u>D = Dup</u>		Relinquished by: Signature <u>(Signature)</u> Printed <u>(Printed)</u> Company <u>(Company)</u> Reason <u>(Reason)</u>	Date <u>(Date)</u> Time <u>(Time)</u>



The Earth Technology Corporation

Laboratory CompuChem Lab Inc.  
Address 3308 Chapel Hill/Nelson Hwy  
Research Triangle Park  
NC 27709

Client Earth Tech  
Address 683 Emory Valley Rd  
Oak Ridge, TN 37830  
Project Name / Number 931802-08

Contract / Purchase Order / Quote

Method of Shipment Fed Ex  
Airbill No. 317 4036033

Shipment No. 41  
Cooler No. 41

Project Manager Greg Maynor  
Telephone No. 615-483-9404  
Fax No. 615-481-3834  
Samplers: (Signature) Greg Maynor

## Chain of Custody Record

Lab job no.:

Date

Page

COC XV-102594-1

10/25/94

1 of 1

Analysis Requested  
No. of Containers  
Remarks  
Filtered metals

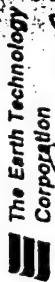
Field Sample Number	Location	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Chemical
V4-BG1-1094	Site 4 BG-1	10/25/94	1913	GW	see encl 4515	4°C	see encl 4515
V4-BG1-1094-F	Site 4 BG-1	"	"	GW	"	"	"
TB-102594-1	Site 4	"	0800	LAB	"	"	"
Total							13

10/25/94

600

Relinquished by: Signature <u>Greg Maynor</u> Printed <u>Greg Maynor</u> Company <u>Earth Tech</u> Reason <u>Lab</u>	Date <u>10/26/94</u> Time <u>200</u>	Received by: Signature <u>[Signature]</u> Printed <u>[Printed]</u> Company <u>[Company]</u>	Date <u>10/26/94</u> Time <u>[Time]</u>
Comments: <u>Held until 10/26/94 Due to Fed Ex closing before samples could get delivered for shipment, catch holding times</u>		Relinquished by: Signature <u>[Signature]</u> Printed <u>[Printed]</u> Company <u>[Company]</u> Reason <u>[Reason]</u>	Date <u>[Date]</u> Time <u>[Time]</u>





Laboratory CompuChem Labs  
Address 3308 Chapel Hill  
Nelson Hwy. Research  
Triangle, NC 27709

Client Earth Tech  
Address 683 Emory Valley Rd  
Oak Ridge, TN 37830

Project Name / Number 931802-08

Contract / Purchase Order / Quote

Method of Shipment Fed Ex

Airbill No. 3174036033

Shipment No. 220001

Cooler No. 2

Project Manager Greg Maynor

Telephone No. 615-483-9404

Fax No. 615-481-3834

Samplers: (Signature) Greg Maynor

Field Sample Number	Location	Depth	Date	Time	Sample Type	Type/Size of Container	Preservation	
							Temp.	Chemical

V4-MW3-1094 Site 4 1750 GW See analysis 10 23 22 1 1

V4-MW3-1094-F Site 4 1750 GW " " " " " "

TB-102694-1 Site 4 6700 WB " " " " " "

10/26/94 194 10 20 13

Filtered muds

10/26/94

10/26/94

10/26/94

10/26/94

10/26/94

10/26/94

10/26/94

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10/26/94

Relinquished by: Greg Maynor

Signature Greg Maynor

Printed Greg Maynor

Company EarthTech

Reason Lab

Date 10/26/94

Time 2:00

Company

Received by:

Signature

Printed

Company

Relinquished by:

Signature

Printed

Company

Reason

Date

Time

Company

Received by:

Signature

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Company

Relinquished by:

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Reason

Date

Time

Company

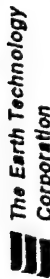
Received by:

Signature

Printed

Company

Comments: wrote Holding times please.



The Earth Technology Corporation

Laboratory Compuchem LAB  
Address 3308 Chapel Hill  
Nelson Hwy, Research  
Triangle, NC

Client Earth Tech  
Address 683 Emory Valley  
Rd, Oak Ridge, TN 37839  
Project Name / Number 931802-08

Contract / Purchase Order / Quote

Method of Shipment Fed Ex  
Airbill No. 3174036653  
Shipment No. #1  
Cooler No. #2  
Project Manager Greg Maynor  
Telephone No. 615-483-9404  
Fax No. 615-481-3834

Samplers: (Signature) Greg Maynor

COC # V-102894-2

# Chain of Custody Record

Lab job no.: 10/28/94  
Date 10/28/94  
Page 1 of 1

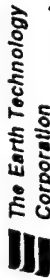
Analysis Results

Field Sample Number	Date	Time	Lab Type	Size of Container	Preservation Temp.	Chemical
TB-102894-2	10/28/94	1200	LAB	see analysis	40C	see analysis
V4-1W3-1094	"	1345	Surf. water	"	"	"
V4-1W3-1094-D1	"	1345	"	"	"	"
V4-D3-00.5	"	1520	Surf. Sed.	"	"	"
V4-D2-00.5	"	1545	"	"	"	"
V4-D2-00.5-D1	"	"	"	"	"	"
V4-D1-00.5	"	"	"	"	"	"
V4-D1-00.5-D1	"	"	"	"	"	"

Field Sample Number	Date	Time	Lab Type	Size of Container	Preservation Temp.	Chemical
TB-102894-2	10/28/94	1200	LAB	see analysis	40C	see analysis
V4-1W3-1094	"	1345	Surf. water	"	"	"
V4-1W3-1094-D1	"	1345	"	"	"	"
V4-D3-00.5	"	1520	Surf. Sed.	"	"	"
V4-D2-00.5	"	1545	"	"	"	"
V4-D2-00.5-D1	"	"	"	"	"	"
V4-D1-00.5	"	"	"	"	"	"
V4-D1-00.5-D1	"	"	"	"	"	"

Field Sample Number	Date	Time	Lab Type	Size of Container	Preservation Temp.	Chemical
TB-102894-2	10/28/94	1200	LAB	see analysis	40C	see analysis
V4-1W3-1094	"	1345	Surf. water	"	"	"
V4-1W3-1094-D1	"	1345	"	"	"	"
V4-D3-00.5	"	1520	Surf. Sed.	"	"	"
V4-D2-00.5	"	1545	"	"	"	"
V4-D2-00.5-D1	"	"	"	"	"	"
V4-D1-00.5	"	"	"	"	"	"
V4-D1-00.5-D1	"	"	"	"	"	"

Relinquished by: <u>Greg Maynor</u> Signature <u>Greg Maynor</u> Printed <u>Greg Maynor</u> Company <u>Earth Tech</u> Reason <u>Lab</u>	Received by: <u>Greg Maynor</u> Signature <u>Greg Maynor</u> Printed <u>Greg Maynor</u> Company <u>Earth Tech</u> Reason <u>Lab</u>	Date <u>10/28/94</u> Time <u>1930</u>
Comments: <u>see COC # V-102894-3 for QA/QC (MS/MSD) volumes.</u>		



The Earth Technology Corporation

Laboratory Compuchem Lab

Address 3308 Chapel Hill/Nelson Hwy, Research Triangle, NC 27709

Client Earth Tech

Address 683 Emory Valley Rd Oak Ridge, TN 37830

Project Name / Number 931802-08

Contract / Purchase Order / Quote \_\_\_\_\_

Project Manager Greg Maynor

Telephone No. 615-483-9401

Fax No. 615-481-3831

Method of Shipment Fed Ex

Albion No. 3174036044

Shipment No. 41

Cooler No. 41

Project Manager Greg Maynor

Telephone No. 615-483-9401

Fax No. 615-481-3831

Method of Shipment Fed Ex

Albion No. 3174036044

Shipment No. 41

Cooler No. 41

Project Manager Greg Maynor

Telephone No. 615-483-9401

Fax No. 615-481-3831

Method of Shipment Fed Ex

Albion No. 3174036044

Shipment No. 41

Cooler No. 41

Project Manager Greg Maynor

Telephone No. 615-483-9401

Fax No. 615-481-3831

Method of Shipment Fed Ex

Albion No. 3174036044

Shipment No. 41

COC # V-102794-1

# Chain of Custody Record

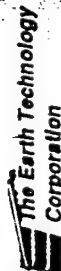
Lab job no.:

Date 10/27/94

Page 1 of 1

Field Sample Number	Location	Date	Time	Sample Type	Type/Size of Container	Temp.	Chemical	Preservation	No. of Containers	Analysis Required	Remarks
V4-MW2-1094	Site 4	10/27/94	1048	GW	SEE ANALYSIS	40C	SEE ANALYSIS	30	69663	USE "QA/QC" FOR MS/MSD	USE "QA/QC" FOR MS/MSD
V4-MW2-1094-F	Site 4	1048	"	"	"	"	"	3	3	USE "QA/QC" FOR MS/MSD	USE "QA/QC" FOR MS/MSD
TB-102794-1	Site 4	0715	LAB	Water	"	"	"	22	22		
								35	35		

Relinquished by:	Received by:
Signature <u>Greg Maynor</u>	Signature <u>[Signature]</u>
Printed <u>Greg Maynor</u>	Printed <u>[Printed]</u>
Company <u>Earth Tech</u>	Company <u>[Company]</u>
Reason <u>Lab</u>	Reason <u>[Reason]</u>
Date <u>10/27/94</u>	Date <u>10/27/94</u>
Time <u>2000</u>	Time <u>[Time]</u>
Comments: <u>USE samples marked "QA/QC" for MS/MSD. Use other unmarked samples as original, very important, the unmarked were split w/ state of VT.</u>	



**The Earth Technology Corporation**

Analytical Laboratories — *San*  
702 Bolso Ave — *San*  
Huntington Beach, Ca. 92649  
714) 892-2565 — FAX (714) 892-2565

Client: Early Techs

Address 683 Emory Valley Rd

Project Name / Number 931802-08

Contract / Purchase Order / Quote

coc # V-103144-1

# Chain of Custody Record

To: Comp. Chem. Lab  
3308 Chapel Hill Rd  
Research Triangle Park, NC 27709-5000

Project Manager C. Wagner

Telephone No. 6015-4833-9404

Fax. No. 615-481-3834

Samplers: (Signature) Ray-12-10-2010

Lab job no. 1  
Date 1/1/00  
Page 1

10/24

THE

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THE UNIVERSITY OF CHICAGO PRESS

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are to be:

† (additional fee)

days max)  
90 days (additional fee)

customer

F100









# SHIFT 1

VTANC

SI SITES 3 and 4  
SUBSURFACE SOIL

Field QA/QC Summary Form

SAIL - VOCs 8010/8020, SVOCs CUP 3/90, TPH 8015, TAL Metals  
QA/QC wtr - VOCs 8010/8020, SVOCs CUP 10/92, TPH 8015, TAL Metals

Sample #	Matrix	Date Collected	Associated Field Blanks	Associated Trip Blank	Associated Equip Rinsate	Associated Field Duplicate	Associated MS/MSD
V4-B2-1416	Sol	9/7/94		TB-090894-1			
V4-B2-1921	Sol	"					
V4-B3-1416	Sol	"					
V4-B3-1921	Sol	"					
V4-B6-1921	Sol	"	FB-090894-P		ER-090894-1		
V4-B6-2426	Sol	"	FB-090894-D				
V4-B4-0911	Sol	9/8/94		TB-090894-1			
V4-B4-1719	Sol	"					
V4-B1-0911	Sol	"					
V4-B1-1719	Sol	"					
V4-BG-1416	Sol	9/10/94	FB-090894-P		ER-091294-1	V4-BG-1416-D	
V4-BG-1921	Sol	"	FB-090894-D	TB-091094-1			
V4-BG-0911	Sol	"					
V3-B5-0305	Sol	9/13/94		TB-091394-1			
V3-B5-1315	"	"					
V3-B2-0305	"	"					
V3-B2-1113	"	"					
V3-B3-0305	"	"					
V3-B3-1315	"	"					
V3-B1-0305	"	"					
V3-B1-1113	"	"					
V3-B4-0305	"	"					
V3-B4-0810	"	"					
V3-B4-1315	"	"					
V4-B5-0406				TB-091494-1			
V4-B5-0911							
V4-B5-1719							

Dup.  
VT Split 1  
QA/QC  
VT Split 2

MS/MSD

TB-091494-1

V4-B5-0406  
V4-B5-0911  
V4-B5-1719

V3-B4-0810  
V3-B4-1315-D

V3-B1-1113-D

V4-BG-1416-D

V4-BG-0911

9-19-94 thru 9-30-94

2nd Billing Shift

## Field QA/QC Summary Form

subsurface soil

[illegible]

1/1

VTANG- SHFT #4 10/18-31/94

SI GW/surface wtr. / surface sed.  
sites 3 and 4

Field QA/QC Summary Form

Sample #	Matrix	Date Collected	Associated Field Blanks	Associated Trip Blank	Associated Equip Rinsate	Associated Field Duplicate	Associated MS/MSD
1) V3-BG1-1094	GW	10/24/94	FB-102494-P	TB-102494-2	ER-102494-1	V3-BG1-1094-D	↑
2) V3-BG1-1094 F	GW	"		"		V3-BG1-1094 DF	
3) V4-BG1-1094	GW	10/25/94		TB-102594-1			
4) V4-BG1-1094 F	GW	"		"			
5) V4-MW3-1094	"	10/26/94		TB-102694-1			
6) V4-MW3-1094 F	"	"		"			
7) V4-MW2-1094	"	10/27/94		TB-102794-1			V4-MW2-1094 (QA/QC) V4-MW2-1094 F (QA/QC)
8) V4-MW2-1094 F	"	"		"			
9) V3-MW1-1094	"	10/31/94		TB-103194-1			
10) V3-MW1-1094 F	"	"		"			
11) V3-MW3-1094	"	"		"			
12) V3-MW3-1094 F	"	"		"			
V4-SW3-1094	Surface	10/28/94	FB-102494-P	TB-102894-2	ER-102894-1	V4-SW3-1094-D	V4-SW3-1094 (QA/QC)
V4-D1-00.5	Surface	10/28/94	FB-102494-P	TB-102894-2	ER-102894-2	V4-D1-00.5-D	↑
V4-D2-00.5	"	"		↓	↓	↓	V4-D2-00.5 (QA/QC)
V4-D3-00.5	"	"		↓	↓	↓	↓

\* TB-102494-1  
\*\* TB-102894-1

**APPENDIX K:     BASE-WIDE BACKGROUND  
LABORATORY ANALYTICAL  
RESULTS FOR INORGANIC  
ANALYTES IN SOILS AND  
GROUNDWATER**

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**Table K-1 Background Summary of Laboratory Analytical Results**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

TAL Metals by CLP 3/90	UNITS:	V1-BACKGROUND				V1-BACKGROUND				V2-BACKGROUND				V2-BACKGROUND				V2-BACKGROUND			
		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Aluminum	mg/kg	6870	UJ	3480	U	3370	U	4450	UJ	4370	U	5680	U								
Antimony	mg/kg	10.40		10.50		10.40		10.50		10.30		11									
Arsenic	mg/kg	5		4.40	B	3.50	(B)	4.50	J	3.30	B	5.40	B								
Barium	mg/kg	20.60	(I)	8.20	(I)	6.80	(I)	65.20	(I)	10.20	(I)	11.80	(I)								
Beryllium	mg/kg	0.10	U	0.10	U	0.10	U	0.20	(I)	0.12	(B)	0.15	(B)								
Cadmium	mg/kg	0.88	UJ	0.89	UJ	0.88	UJ	0.89	UJ	0.87	UJ	0.93	UJ								
Calcium	mg/kg	1130		1260		1500		18300		569	(I)	915	(I)								
Chromium	mg/kg	10.70		7.80		9.50		10		8.80		9.50									
Cobalt	mg/kg	5.80	(I)	4.60	(I)	5.60	(I)	4.70	(I)	5.50	(I)	5.90	(I)								
Copper	mg/kg	15.90		12.70	J	9.40	J	19.30	J	9.10	J	10.10	J								
Iron	mg/kg	11500	J	9670		11700		11000	J	9220		11900									
Lead	mg/kg	1940	J	2210		2320		11900	J	2680		2950									
Magnesium	mg/kg	247	J	242		306		244	J	146		170									
Manganese	mg/kg	0.10	U	0.10	U	0.10	U	0.10	UJ	0.10	U	0.11	U								
Nickel	mg/kg	12		14.10		14.70		9.80		16.90		17.30									
Potassium	mg/kg	309	(I)	223	(I)	274	(I)	366	(I)	291	(I)	268	(I)								
Selenium	mg/kg	0.58	U	0.58	UJ	0.55	UJ	0.58	UJ	0.57	UJ	0.61	UJ								
Silver	mg/kg	0.66	U	0.66	U	0.66	U	0.66	U	0.65	U	0.69	U								
Sodium	mg/kg	108	(B)	107	(B)	123	(B)	116	(B)	131	(B)	141	(B)								
Thallium	mg/kg	0.75	U	0.74	UJ	0.71	UJ	0.74	UJ	0.74	UJ	0.78	UJ								
Vanadium	mg/kg	12.10	(I)	7.70	(I)	9.70	(I)	10.90	(I)	7.10	(I)	10.30	(I)								
Zinc	mg/kg	50.30		20.20		20.80		38.20		22.30		24.30									

Sample IDs : Sample Intervals (0406) in feet below ground surface; D indicates duplicate sample.

mg/kg milligrams/kilogram  
TAL Target Analyte List  
CLP 3/90 Contract Laboratory Program. March 1990 Methods

Data Validation Qualifiers  
(I) Result is between the method detection limit and the sample quantitation limit  
(B) Possible blank contamination  
(J) Reported value is estimated  
(U) Compound analyzed for but not detected

**Table K-1 Background Summary of Laboratory Analytical Results**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

	SITE:	V2-BACKGROUND		V2-BACKGROUND		V2-BACKGROUND		V3-BACKGROUND		V3-BACKGROUND		V3-BACKGROUND	
		LOCATOR:	V2-BG1	V2-BG1	V2-BG1	V2-BG1	V2-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-BG1
	SAMPLE ID:	V2-BG1-1820						V3-BG1-1820	V3-BG1-1820	V3-BG1-1820	V3-BG1-1820	V3-BG1-1820	V3-BG1-1820
	COLLECTION DATE:	10/10/94						09/20/94	09/20/94	09/20/94	09/20/94	09/20/94	09/20/94
	ASSOCIATED QC:	TB-100994-3, ER-100994-4	TB-100994-3, ER-100994-4	TB-100994-3, ER-100994-4	TB-100994-3, ER-100994-4	TB-100994-3, ER-100994-4	TB-100994-3, ER-100994-4	TB-092094-1, ER-092094-1	TB-092094-1, ER-092094-1	TB-092094-1, ER-092094-1	TB-092094-1, ER-092094-1	TB-092094-1, ER-092094-1	TB-092094-1, ER-092094-1
		FB-101194-1, FB-090894-D	FB-101194-1, FB-090894-D	FB-101194-1, FB-090894-D	FB-101194-1, FB-090894-D	FB-101194-1, FB-090894-D	FB-101194-1, FB-090894-D	FB-092194-1, FB-090894-D	FB-092194-1, FB-090894-D	FB-092194-1, FB-090894-D	FB-092194-1, FB-090894-D	FB-092194-1, FB-090894-D	FB-092194-1, FB-090894-D
	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
TAL Metals by CLP 3/90													
Aluminum	mg/kg	4110	U	4310	U	3490	UJ	5950	U	2270	U	6660	U
Antimony	mg/kg	10.80	B	10.70	B	12.30	J	6.90		11.50		7.50	
Arsenic	mg/kg	4.50		3.80		2.90		5.60		3.60		2.70	
Barium	mg/kg	9.20	U	9.60	U	6.50	U	14.20	U	5.20	U	15.30	U
Beryllium	mg/kg	0.11	U	0.10	U	0.12	U	0.25	U	0.10	U	0.27	U
Cadmium	mg/kg	0.92	UJ	0.90	UJ	1	UJ	0.77	U	0.95	U	0.84	U
Calcium	mg/kg	1700		1940		1760		1410		1470		2610	
Chromium	mg/kg	8.40		10		10.10		18.20		5.90	B	14.40	
Cobalt	mg/kg	5.80	U	5.70	U	6.50	U	7.50	U	3.50	U	8	U
Copper	mg/kg	11.50	J	12.40	J	9.60	J	11.20		9.90		16.30	
Iron	mg/kg	11300		12000		11400	J	13600		7010		15500	J
Lead	mg/kg	3.10		3.50		2.70	J	5.50		2.30		4.60	J
Magnesium	mg/kg	2420		2970		2730	J	3540		1720		4000	
Manganese	mg/kg	286		279		201	J	328		201		367	
Mercury	mg/kg	0.11	U	0.11	U	0.12	UJ	0.11	U	0.10	U	0.12	U
Nickel	mg/kg	15.50		17.40		16.20		23.40		12.40		21.50	
Potassium	mg/kg	366	U	358	U	288	U	581	U	237	U	633	U
Selenium	mg/kg	0.60	UJ	0.59	UJ	0.68	UJ	0.89	UJ	0.81	U	0.97	UJ
Silver	mg/kg	0.68	U	0.67	U	0.77	U	0.91	U	0.74	U	0.99	U
Sodium	mg/kg	139	U	161	U	139	U	119	U	153	U	294	U
Thallium	mg/kg	0.77	UJ	0.76	UJ	0.88	UJ	0.82	U	0.74	U	0.89	U
Vanadium	mg/kg	9.70	U	10	U	9.50	U	11.20	U	5.90	U	13.40	U
Zinc	mg/kg	24.40	U	26.40	U	24.10	U	26.70	U	16.10	U	35.50	U

Sample IDs : Sample Intervals (0406) in feet below ground surface; D indicates duplicate sample.

mg/kg milligrams/kilogram  
 TAL Target Analyte List  
 CLP Contr. Laboratory

Data Validation Qualifiers

U Result is between the method detection limit and the sample quantitation limit  
 B Possible blank contamination  
 J Reported value is estimated  
 UJ Ground analyzed for but not detected

Program: March 1990 Methods

wp/APP-K 1008 April 29, 1990

**Table K-1 Background Summary of Laboratory Analytical Results**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

SITE: V3-BACKGROUND V4-BACKGROUND V4-BACKGROUND V4-BACKGROUND V4-BACKGROUND  
 LOCATOR: V3-BG1 V4-BG V4-BG V4-BG V4-BG  
 SAMPLE ID: V3-BG1-3840D V4-BG-0911 V4-BG-1416 V4-BG-1416D V4-BG-1921  
 COLLECTION DATE: 09/20/94 09/10/94 09/10/94 09/10/94 09/10/94  
 ASSOCIATED QC: TB-092094-1, FB-092094-1 TB-091094-1, FB-090894-1 TB-091094-1, FB-090894-1 TB-091094-1, FB-090894-1 TB-091094-1, FB-090894-1

	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
TAL Metals by CLP 3/90											
Aluminum	mg/kg	6980	U	3540	U	3790	U	5280	U	4140	U
Antimony	mg/kg	8		11.60		11.50		12.10		14	
Arsenic	mg/kg	3		3.10		8.90		9.60		3.50	
Barium	mg/kg	16.50	()	9.60	()	13	()	13.60	()	9	()
Beryllium	mg/kg	0.29	U	0.17	U	0.10	U	0.13	U	0.13	U
Cadmium	mg/kg	0.90	U	0.96	U	0.95	U	1	U	1.20	U
Calcium	mg/kg	2840		1240		1450		1750		1700	
Chromium	mg/kg	14.80		7.70		6.90		10.60		8.30	
Cobalt	mg/kg	8.40	()	7.40	()	8.50	()	10.70	()	8.10	()
Copper	mg/kg	17.30		11.70		14.90		15.30		13.90	
Iron	mg/kg	16200	J	7700		13200		16500		10500	
Lead	mg/kg	4.90		4.10		3.60		4		3.80	
Magnesium	mg/kg	4190		1930		1950		2870		2520	
Manganese	mg/kg	391		255		580		548		263	
Mercury	mg/kg	0.13	U	0.10	U	0.10	U	0.11	U	0.13	U
Nickel	mg/kg	28.30	U	15.10	()	18.70	()	21.20	()	16.20	()
Potassium	mg/kg	675	U	363	U	392	U	524	U	434	U
Selenium	mg/kg	1	U	0.81	U	0.80	U	0.85	U	0.98	U
Silver	mg/kg	1.10	U	0.75	U	0.74	U	0.78	U	0.90	U
Sodium	mg/kg	314	U	114	U	161	U	169	U	172	U
Thallium	mg/kg	0.95	U	0.75	U	0.74	U	0.78	U	0.90	U
Vanadium	mg/kg	13.10	U	6.80	U	9.60	U	13.40	U	10.10	U
Zinc	mg/kg	37.30		18.30		26.40		31.80		26.70	

Sample IDs : Sample Intervals (0406) in feet below ground surface; D indicates duplicate sample.

mg/kg milligrams/kilogram  
 TAL Target Analyte List  
 CLP 3/90 Contract Laboratory Program, March 1990 Methods

**Data Validation Qualifiers**

() Result is between the method detection limit and the sample quantitation limit  
 B Possible blank contamination  
 J Reported value is estimated  
 U Compound analyzed for but not detected



**Table K-1 Background Summary of Laboratory Analytical Results**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

SITE:  
 LOCATOR:  
 SAMPLE ID:  
 COLLECTION DATE:  
 ASSOCIATED QC:

V1-BACKGROUND V2-BACKGROUND V3-BACKGROUND V3-BACKGROUND  
 V1-RFW1A V2-BG1 V3-BG1 V3-BG1  
 V1-RFW1A-0595 V2-BG1-0595 V3-BG1-1094 V3-BG1-1094D  
 05/10/95 05/09/95 10/24/94 10/24/94  
 TB-051095-ER-050995 TB-050995-ER-050995 TB-102494-2-ER-102494-1 TB-102494-2-ER-102494-1  
 FB-050995-PFB-050995-D FB-050995-PFB-050995-D FB-092494-P FB-092494-P

UNITS:

**TAL Metals by CLP 3/90**

Aluminum	µg/l	58400	J	3520	J	3860	3230	(B)
Aluminum, Dissolved	µg/l	117	U	83.90	U	63.60	74.30	U
Antimony	µg/l	47.60	U	47.60	U	50.80	50.80	U
Antimony, Dissolved	µg/l	47.60	U	47.60	U	50.80	50.80	U
Arsenic	µg/l	39.70	J	4.50	(B)	4.90	4.60	(B)
Arsenic, Dissolved	µg/l	1.90	U	1.90	U	1.70	1.70	U
Barium	µg/l	363	J	20.20	U	35	32.40	U
Barium, Dissolved	µg/l	20.70	U	3.20	(B)	7.90	8.10	U
Beryllium	µg/l	2	(B)	0.20	U	0.50	0.50	U
Beryllium, Dissolved	µg/l	0.20	(B)	0.20	U	0.50	0.50	U
Cadmium	µg/l	4.40	U	4.40	U	4.30	4.30	U
Cadmium, Dissolved	µg/l	4.40	U	4.40	U	4.30	4.30	U
Calcium	µg/l	28400	U	22400	U	54800	53400	U
Calcium, Dissolved	µg/l	10600	U	23000	U	50700	51500	U
Chromium	µg/l	108	U	14.30	B	9.80	7.30	U
Chromium, Dissolved	µg/l	6.50	U	6.50	U	6.30	5.40	U
Cobalt	µg/l	69.80	U	8.30	U	11.80	11.80	U
Cobalt, Dissolved	µg/l	8.30	U	8.30	U	11.80	11.80	U
Copper	µg/l	128	U	40.90	U	23.50	21.60	U
Copper, Dissolved	µg/l	4.80	U	4.80	(B)	7.60	7.60	U
Iron	µg/l	103000	U	9250	(B)	9810	8000	U
Iron, Dissolved	µg/l	71.20	U	16.80	(B)	63	63	(B)
Lead	µg/l	39.90	J	7.70	U	7.20	6.20	J
Lead, Dissolved	µg/l	1.80	U	1.80	U	2.30	2.30	U
Magnesium	µg/l	29700	U	6160	U	9660	8950	U
Magnesium, Dissolved	µg/l	1620	U	5030	U	7880	7900	U
Manganese	µg/l	3770	U	279	U	553	540	U
Manganese, Dissolved	µg/l	8.20	(B)	11.60	U	81.60	82	U
Mercury	µg/l	0.20	U	0.20	U	0.20	0.20	U
Mercury, Dissolved	µg/l	0.20	U	0.20	U	0.20	0.20	U
Nickel	µg/l	154	U	16.10	U	17.30	19.90	U
Nickel, Dissolved	µg/l	12.20	U	12.20	U	17.30	17.30	U

Sample IDs : Sample Date (0595); D indicates duplicate sample.

Data Validation Qualifiers

Result is between the method detection limit and the sample quantitation limit  
 Possible blank contamination  
 Resulted value is estimated  
 Compound analyzed for but not detected

µg/l micrograms/liter  
 Target List  
 Confirmed Laboratory, M  
 30 Me

**Table K-1 Background Summary of Laboratory Analytical Results**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

SITE:  
 LOCATOR:  
 SAMPLE ID:  
 COLLECTION DATE:  
 ASSOCIATED QC:

V1-BACKGROUND V2-BACKGROUND V3-BACKGROUND V3-BACKGROUND  
 V1-RFW1A V2-BG1 V3-BG1 V3-BG1  
 V1-RFW1A-0595 V2-BG1-0595 V3-BG1-1094 V3-BG1-1094D  
 05/10/95 05/09/95 10/24/94 10/24/94  
 TB-051095,ER-050995 TB-050995,ER-050995 TB-102494-2,ER-102494-1  
 FB-050995-P,FB-050995-D FB-050995-P,FB-050995-D FB-092494-P

	UNITS:	V1-BACKGROUND		V2-BACKGROUND		V3-BACKGROUND		V3-BACKGROUND	
		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Potassium	µg/l	10000		1280	U	1890		1620	
Potassium, Dissolved	µg/l	1280	U	1280	U	1170		1010	
Selenium	µg/l	27	UJ	2.70	UJ	2.80	U	2.80	U
Selenium, Dissolved	µg/l	2.70	U	2.70	U	2.80	U	2.80	U
Silver	µg/l	4.30	U	4.30	U	3.20	U	3.20	U
Silver, Dissolved	µg/l	4.30	U	4.30	U	3.20	UJ	3.20	UJ
Sodium	µg/l	166000		2670		109000		98100	
Sodium, Dissolved	µg/l	179000	J	2710		103000		101000	
Thallium	µg/l	3.60	UJ	3.60	U	36	U	36	U
Thallium, Dissolved	µg/l	36	UJ	3.60	UJ	36	U	36.04	U
Vanadium	µg/l	112		9.60		8.70		7.40	
Vanadium, Dissolved	µg/l	3.40	U	3.40	U	5.40	U	5.40	U
Zinc	µg/l	280	J	32.60		28.30		28.30	
Zinc, Dissolved	µg/l	3.60	(B)	5.60	(B)	5.20	U	5.20	U

Sample IDs : Sample Data (0595); D indicates duplicate sample.

µg/l micrograms/liter  
 TAL Target Analyte List  
 CLP 3/90 Contract Laboratory Program, March 1990 Methods

Data Validation Qualifiers  
 U Result is between the method detection limit and the sample quantitation limit  
 B Possible blank contamination  
 J Reported value is estimated  
 U Compound analyzed for but not detected

**Table K-1 Background Summary of Laboratory Analytical Results**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

SITE: V4-BACKGROUND  
 LOCATOR: V4-BG  
 SAMPLE ID: V4-BG1-1094  
 COLLECTION DATE: 10/25/94  
 ASSOCIATED QC: TB-102594-1, ER-102494-1  
 FB-092494-P

	UNITS:	RESULT	QUAL
Tal Metals by CLP 3/90			
Aluminum	µg/l	7960	
Aluminum, Dissolved	µg/l	70.30	(B)
Antimony	µg/l	50.80	U
Antimony, Dissolved	µg/l	50.80	U
Arsenic	µg/l	5	(B)
Arsenic, Dissolved	µg/l	1.70	U
Barium	µg/l	98.90	()
Barium, Dissolved	µg/l	51.90	()
Beryllium	µg/l	0.50	U
Beryllium, Dissolved	µg/l	0.50	U
Cadmium	µg/l	4.30	U
Cadmium, Dissolved	µg/l	4.30	U
Calcium	µg/l	109000	
Calcium, Dissolved	µg/l	136000	
Chromium	µg/l	21.10	
Chromium, Dissolved	µg/l	5.40	U
Cobalt	µg/l	11.80	U
Cobalt, Dissolved	µg/l	11.80	U
Copper	µg/l	19.20	()
Copper, Dissolved	µg/l	7.60	U
Iron	µg/l	11600	
Iron, Dissolved	µg/l	3.80	U
Lead	µg/l	5.50	J
Lead, Dissolved	µg/l	2.30	U
Magnesium	µg/l	20100	
Magnesium, Dissolved	µg/l	19400	
Manganese	µg/l	1030	
Manganese, Dissolved	µg/l	1040	
Mercury	µg/l	0.20	U
Mercury, Dissolved	µg/l	0.20	U
Nickel	µg/l	24.90	()
Nickel, Dissolved	µg/l	17.30	U

Sample IDs : Sample Date (0595); D indicates duplicate sample.

µg/l micrograms/liter  
 Target Analyte List  
 Confirmed Laboratory, M... 0 Met...

Data Validation Qualifiers  
 (0) Result is between the method detection limit and the sample quantitation limit  
 (B) Possible blank contamination  
 (J) Resulted value estimated  
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**Table K-1 Background Summary of Laboratory Analytical Results**  
**Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4**  
**Vermont Air National Guard Base**

SITE: V4-BACKGROUND  
 LOCATOR: V4-BG  
 SAMPLE ID: V4-BG1-1094  
 COLLECTION DATE: 10/25/94  
 ASSOCIATED QC: TB-102594-1, ER-102494-1  
 FB-092494-P

	UNITS:	RESULT	QUAL
Potassium	µg/l	3450	()
Potassium, Dissolved	µg/l	2090	()
Selenium	µg/l	28	U
Selenium, Dissolved	µg/l	28	U
Silver	µg/l	3.20	U
Silver, Dissolved	µg/l	3.20	UU
Sodium	µg/l	60000	
Sodium, Dissolved	µg/l	83800	
Thallium	µg/l	36	U
Thallium, Dissolved	µg/l	36	U
Vanadium	µg/l	13.20	()
Vanadium, Dissolved	µg/l	5.40	U
Zinc	µg/l	37.60	
Zinc, Dissolved	µg/l	5.20	U

Sample IDs : Sample Date (0595); D indicates duplicate sample.  
 µg/l micrograms/liter  
 TAL Target Analyte List  
 CLP 3/90 Contract Laboratory Program, March 1990 Methods

Data Validation Qualifiers  
 () Result is between the method detection limit and the sample quantitation limit  
 B Possible blank contamination  
 J Reported value is estimated  
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